SONY

VIDEO GRAPHIC PRINTER

# UP-895
# UP-895CE
# UP-895MD

## SERVICE MANUAL

1st Edition

## ⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

## ⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## ⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

## ⚠ AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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3-868-286-**01** (1)

# *Video Graphic Printer*

**Instructions for Use** Page 20 GB

**(For UP-895MD/895CE)**

## UP-895
## UP-895MD
## UP-895CE

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## Section 1
## Operating Instructions

This section is extracted from operation manual.

# WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

THIS APPARATUS MUST BE EARTHED.

**For UP-895MD/895CE**

**Symbol on the products**

This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### For the customers in the U.S.A. (for UP-895/895MD)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

This device requires shielded interface cables to comply with FCC emission limits.

### For the customers in Canada (for UP-895MD)

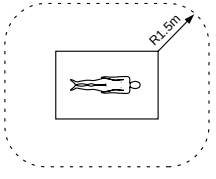
This unit has been certified according to Standard CSA C22.2 NO.601.1.

### For UP-895MD/895CE

### Important safeguards/notices for use in the medical environments

1. All the equipments connected to this unit shall be certified according to Standard IEC601-1, IEC950, IEC65 or other IEC/ISO Standards applicable to the equipments.
2. When this unit is used together with other equipment in the patient area*, the equipment shall be either powered by an isolation transformer or connected via an additional protective earth terminal to system ground unless it is certified according to Standard IEC601-1.

* Patient Area




3. The leakage current could increase when connected to other equipment.

4 This equipment generates, uses, and can radiate frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to other equipment. If this unit causes interference (which can be determined by unplugging the power cord from the unit), try these measures: Relocate the unit with respect to the susceptible equipment. Plug this unit and the susceptible equipment into different branch circuit. Consult your dealer. (According to Standard EN60601-1-2 and CISPR11, Class B, Group 1)

### Caution

When you dispose of the unit or accessories, you must obey the law in the relative area or country and the regulation in the relative hospital.





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# Overview

The UP-895/895MD/895CE is a black and white video graphics printer that can be used to print images displayed on a video monitor.
This manual covers the UP-895/895MD/895CE models. Wherever the operation or any other item differs among the models, this manual clearly describes those differences.

### Clear, consistent print quality

- High definition, 12.8 dots/mm printing using a thermal head with a high-speed drive IC.
- 256 gradations of black and white.
- Stable printouts using temperature compensation technology

### Fast printing

- You can make an A-7 size single printout in about 3.9 seconds in STD and NORM mode.
- You can make a maximum of 11 copies of the same image continuously.

### Two way printing direction and various image sizes

- The printing direction selector on the front panel enables you to print in vertical and horizontal directions.
- The image size selector on the front panel enables you to select various printing size.

### DIP switches and slide switches to optimize the printer

- You can adjust printout quality and select the paper type by setting the slide switches.
- You can make printouts starting either from the bottom or top of the image by setting the DIRECTION of DIP switch.
- You can set the printout aspect ratio to 4:3 or 1:1 by setting the ASPECT of DIP switch.
- You can set the range to be printed by setting the SCAN DIP switch.
- You can save paper by setting the POSTFEED DIP switch (paper saving function).

### Automatic video signal determination

The type of input signal, black and white (EIA or CCIR) or input color (NTSC or PAL), is automatically determined and printed in the same duration and size.

### Alarm buzzer

The alarm buzzer prevents you from making any mistakes.

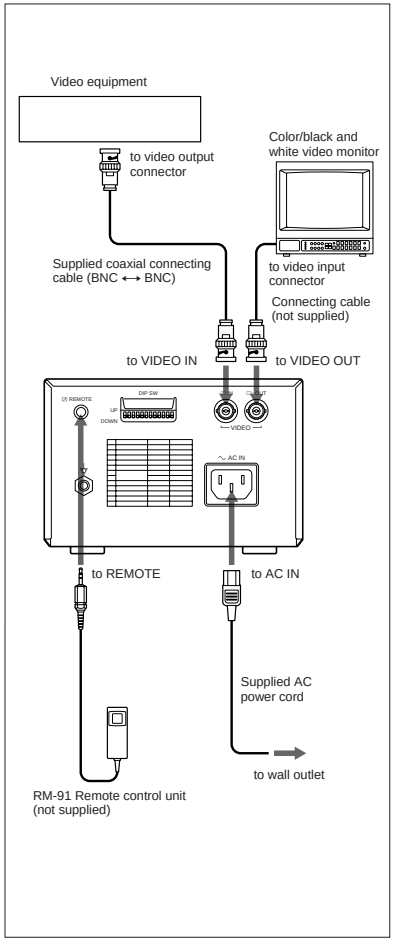
### Easy and quick paper loading

You can load paper just by opening the door and placing the paper roll.

# Connection

**Notes**

- Turn off the power to each device before making any connections.
- Connect the AC power cord last.



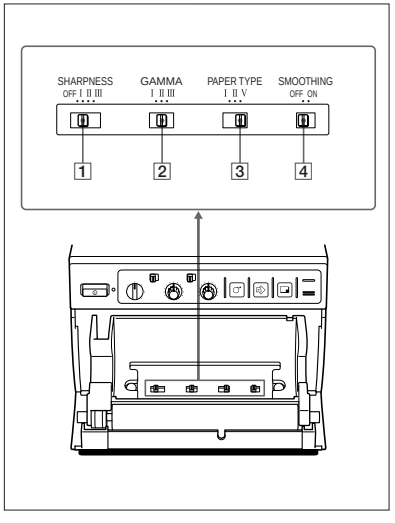

# Setting Up the Printer

You can set the printer to the desired specifications using two kinds of switches.

- Slide switches on the paper tray inside the front door
  You can easily set the printer specifications most frequently used in daily operation, such as selection of the paper type and printout quality.
- DIP switches on the rear panel
  You can set the print mode and other settings you do not need to change frequently

## Setting the Slide Switches on the Paper Tray

The factory settings are as follows.



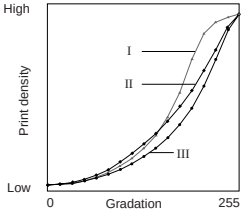

**1 SHARPNESS switch**
Adjusts the sharpness of the printout.
**OFF:** Not to emphasize an outline of the printout, set the switch to this position.
**I, II, III:** To make a sharper outline, set the switch to the proper position. In I, II and III order, the printout becomes sharper.





**2 GAMMA switch**
Sets the tone of printouts (density gradation).
**I**: Soft gradation
**II**: Standard
**III**: Hard gradation

The diagram below shows the curve of density graduation for each tone.




**Note**

This switch is effective only when you use paper types UPP-110HD or UPP-110HG, that is, when the PAPER TYPE switch 3 is set to either II or V.

**3 PAPER TYPE switch**
Selects the paper type.
Set the switch to the type of paper to be used.

| Type of paper | Switch position |
|---|---|
| UPP-110S | I (Normal) |
| UPP-110HD | II (High density) |
| UPP-110HG | V (High glossy) |

**4 SMOOTHING switch**
Selects the line density.
**OFF:** Normally keep this switch to this position.
**ON:** To set the print line density to high density and obtain the better print quality, set the switch to this position. However, the printing speed is slower than at the OFF position.

**Note**

This switch becomes effective under the following conditions.

- When the image size selector on the front panel is set to either SML or NOR and STD/SIDE selector is set to STD, and ASPECT of DIP switch 3 on the rear panel is set to 4 : 3.
- When the image size selector is set to a position other than SML and NOR and ASPECT of DIP switch 3 is set to 1 : 1.

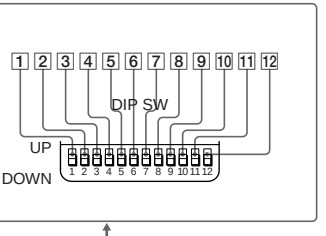
Under any other conditions except those above, the print line density is not set to high and the print quality is standard even if you set the switch to ON.

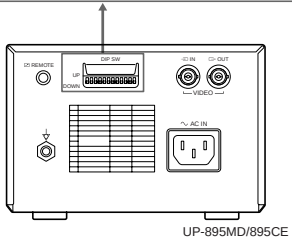
## Setting the DIP Switches on the Rear Panel

### To change the DIP switch settings

Use a small pointed tool such as a small screwdriver.

The factory settings are as follows.



UP-895MD/895CE

**DIP SW FUNCTION TABLE**

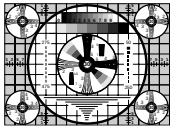
| NO. | FUNCTION | SW-DOWN | SW-UP |
|---|---|---|---|
| 1 | INTERRUPT | ON | OFF |
| 2 | POSTFEED | ON | OFF |
| 3 | ASPECT | 4:3 | 1:1 |
| 4 | MEMORY | FRAME | FIELD |
| 5 | DIRECTION | NORM | REV |
| 6 | SCAN | – | WIDE 2 |
| 7 | | WIDE 1 | NORM |
| 8 | OUTPUT | THRU | EE |
| 9 | AGC | OFF | ON |
| 10 | RESERVED | – | – |
| 11 | INPUT | B & W | COLOR |
| 12 | 75 Ω | ON | OFF |

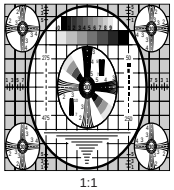
SW-DOWN or SW-UP indicated in parentheses shows the switch position.

**1 INTERRUPT switch**
Sets whether the PRINT button is activated to enable interruption of the printing process and capture an image in memory.
**ON (SW-DOWN):** Interrupts the printing currently under way and prints a new picture when you press the PRINT button during printing.
**OFF (SW-UP):** Disregards the fact that the PRINT button is pressed during printing and continues the printing currently under way.
If you press the PRINT button during printing in the OFF mode, the alarm buzzer will sound.

**2 POSTFEED switch**
Sets extra blank paper once an image has been printed.
**ON (SW-DOWN):** Feeds out extra blank paper once an image has been printed.
**OFF (SW-UP):** Does not feed out extra blank paper once an image has been printed.
To save paper by feeding only a short length of paper after printing an image, set this switch to OFF. In this way, you can make more printouts per roll of paper, but you have to feed the paper manually using the FEED button and tear off the paper. When you make multiple copies of the same printout, this position is effective in helping to save paper.

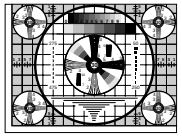
**3 ASPECT 4:3/1:1 switch**
Normally keep this switch set to 4:3 (SW-DOWN).
When the aspect ratio of the video signal is 1:1, set it to 1:1 (SW-UP).
The printout will be longer than a printout made at 4:3.

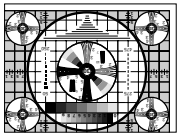

4:3


1:1

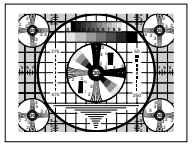
**4 MEMORY switch**
**FRAME (SW-DOWN):** Normally keep this switch set to this position.
**FIELD (SW-UP):** When printing fast-moving images (such as a ball being thrown), the printout may blur. If this happens, set the switch to this position. The printout definition will be poorer but less blurred.

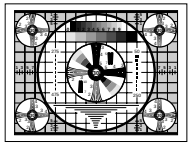
**5 DIRECTION switch**
Selects whether the top or bottom of the screen is to be printed first.
**NORM (SW-DOWN):** Normally keep this switch set to this position. Printing is done from the bottom of the screen.
**REV (SW-UP):** Starts printing from the top of the screen.

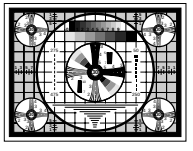

NORM


REV

**6 7 SCAN switch**
Sets the printout range. The printout range is progressively widened in the NORM, WIDE 1, and WIDE 2 order.
**NORM (Switch 7, SW-UP position):** Prints only the image displayed on the standard screen size of the video monitor.
**WIDE 1 (Switch 7, SW-DOWN position):** Prints when the signal scans beyond the edge of the standard monitor screen.
**WIDE 2 ( Switch 6, SW-UP position):** To further extend the range, select this setting.
When you set Switch 6 to the SW-UP position (WIDE 2 position), WIDE 2 is selected regardless of the setting of SCAN switch 7.


NORM


WIDE 1


WIDE 2





**8 OUTPUT switch**
Selects the video signal output from the VIDEO OUT connector on the rear panel.
**THRU (SW-DOWN):** Signals are output directly to the video monitor.
**EE (SW-UP):** Signals are output to the video monitor after being processed by the printer.

**9 AGC (Automatic Gain Control) switch**
Adjusts the input signal to the optimum printing level.
**OFF (SW-DOWN):** Normally keep this switch set to this position.
**ON (SW-UP):** When the printout image appears too dark or too light, set the switch to this position to adjust the input signal to the optimum level.

**10 RESERVED switch**
Keep this switch set to the factory setting (SW-DOWN)

**11 INPUT switch**
**B & W (SW-DOWN):** When the signal to be printed is black and white, set the switch to this position.
**COLOR (SW-UP):** When the signal is color, set the switch to this position.

**12 75 Ω ON/OFF switch**
**ON (SW-DOWN):** When nothing is connected to the VIDEO OUT connector, set the switch to this position.
**OFF (SW-UP):** When a video monitor or other video equipment is connected to the VIDEO OUT connector, set the switch to this position.
**Example:**
When you connect two printers to one piece of video equipment, set the 75Ω switch of one of the printers to ON, and the other to OFF.
When you connect the printer and a video monitor to the video equipment, set the 75Ω switch to OFF.

# Paper

**Use only UPP-110S/110HD/110HG paper as specified for the UP-895/895MD/895CE. If another type of paper is used, the quality of the printout cannot be guaranteed. Use of another type of paper may also cause malfunction of the printer.**
**You cannot use the UPP-110HA paper as specified for the UP-880/890MD/890CE.**

### Type of paper

The following types of paper are available.

| Printing quality | | Type of paper |
|---|---|---|
| TYPE I | (Normal) | UPP-110S |
| TYPE II | (High Density) | UPP-110HD |
| TYPE V | (High Glossy) | UPP-110HG |

### Notes on paper

#### Storing unused paper

Avoid storing unused paper in a location subject to the following. Storage of unused paper in such a place results in deterioration of unused paper.
- Store unused paper in a cool and dark place (below 30°C or 86°F).
- Do not store unused paper in a hot or humid place. Do not leave unused paper in direct sunlight or other bright places.
- Do not allow any volatile organic solvent or vinyl chloride to touch unused paper. Alcohol, plastic tape or film will deteriorate unused paper.

#### When loading paper

- Do not fold the paper or touch the printing surface. Dust or finger prints are likely to cause poor print quality.
- Before loading the paper roll, remove the label attached to the top of paper roll and pull out the first 15 to 20 cm (6 to 8 inches). The label mark is likely to cause poor print quality.

#### Storing printouts

- Avoid storing printouts in a location subject to the following. Storage of your printouts in such a place results in fading of printouts.
  – Store printouts in a cool and dark place (below 30°C or 86°F). We recommend storing printouts in a bag made of clay-free paper or polypropylene.
  – Do not store printouts in a hot or humid place. Do not leave printouts in direct sunlight or other bright places.
  – Do not allow any volatile organic solvent or vinyl chloride to touch printouts. Alcohol, plastic tape or film will cause the printout to fade.
- Do not stack your printouts on or under a diazo copy sheet. Also do not attach the printed surface to another printed surface. The printout may become discolored.
- To attach the printout to another piece of paper, use double-sided adhesive tape or water-based glue.

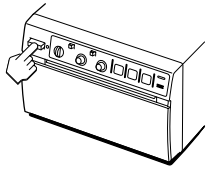
# Loading Paper

**Notes**

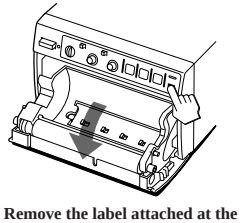
- Before loading paper, read “Paper” on page 25.
- Do not fold the paper or touch the printing surface. Dust or finger prints are likely to cause poor print quality.
- Use only UPP-110S/110HD/110HG paper as specified for this printer. (page 25)
- Set the PAPER TYPE switch according to the paper type. (page 23)

## Loading

**1** **Press the power switch to turn on the printer.**
The power lamp lights.



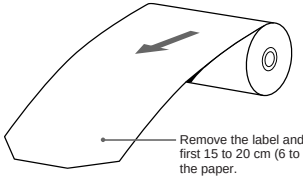
**2** **Press the OPEN button to open the door.**



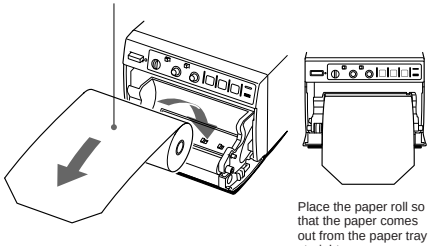
**3** **Remove the label attached at the top of the paper roll, pull out the first 15 to 20 cm (6 to 8 inches) of the paper, then place the paper roll in the paper tray.**

**Note**

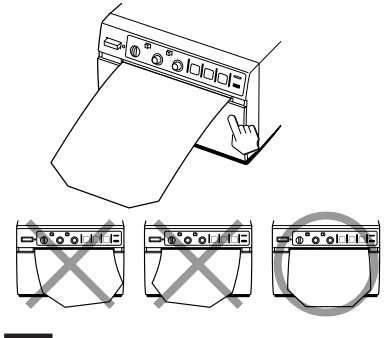
When pulling out the top of the paper roll or placing it in the paper tray, be careful not to drop the paper roll. If dust has accumulated on the paper, you may not be able to use this paper because dust or finger prints are likely to cause poor print quality or malfunction of the head.




Place the paper with the thermo-sensitive side (printing side) up. If you place the paper with the printing side down by mistake, the image will not be printed.




**4** **Close the door by pushing it.**



**Note**

- If the paper roll is not placed properly and does not come out from the paper tray straight, this may cause paper jamming.
- If you did not pull out the paper enough in step 3, feed the paper at least 15 to 20 cm by pressing and holding down the FEED button. **Do not pull out the paper manually.**





# Printing

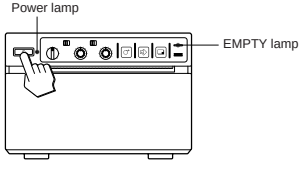
### Before making printouts

Confirm the following:

- Are the connections correct? (page 22)
- Are the slide switches and DIP switches set correctly? (pages 22 and 23)
- Is the paper type set correctly? (page 23)
- Is the paper roll loaded properly? (page 26)
- Is the video source being input?

## Making Printouts

**1** **Press the power switch to turn on the printer.**
The power lamp lights and the EMPTY lamp blinks for a few seconds.



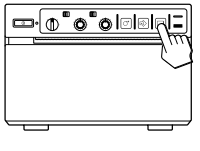

**Note**

Make sure that the EMPTY lamp turns out after blinking for a few seconds. If lit, the paper has run out. Load the paper. (“Loading Paper” on page 26)

**2** **Select the printing direction and image size.**
See “Selecting the Printing Direction/Image Size” on the next page.

**3** **Start the video source.**
This operation is done using the controls of the video equipment which you are using as a source.

**4** **When the image you want to print is on the video monitor, press the PRINT button.**
The image displayed at the instant you press the PRINT button is captured into memory and is printed out immediately.



### To interrupt printing

Press either the OPEN or FEED button while printing. The printer stops printing.

### To stop printing and print another image displayed on the video monitor

To do this, DIP Switch 1 (INTERRUPT) must be set to ON (SW-DOWN). (See page 24.)
Press the PRINT button while printing or copying. The printer stops printing, captures the new image, and starts printing the new image.
In SMALL mode, the printer stops printing and captures the first image.

### If the printout image is blurred

A rapidly moving image may be blurred when printed. Should this occur, change DIP Switch 4 (MEMORY) to FIELD (SW-UP). (See page 24.) The printout quality will be poorer, but less blurred.

### To print in SMALL mode

You can print in SMALL mode, where two different images can be captured and printed together on one printout, by setting the image size selector on the front panel to the SML position.
**To print in SMALL mode:** Press the PRINT button twice in step 4. When you press the PRINT button once, the buzzer sounds and the first image is captured. The printer starts printing after the PRINT button is pressed twice.
For detailed information on SMALL mode, see “Selecting Printing Direction/Image Size” on the next page.

### To feed the paper

Press and hold down the FEED button to feed the paper. **Do not pull out the paper manually.**

### Storing printouts

- Avoid storing printouts in a location subject to the following. Storage of your printouts in such a place results in fading of printouts.
  - Store printouts in a cool and dark place (below 30°C or 86°F). We recommend storing printouts in a bag made of clay-free paper or polypropylene.
  - Do not store printouts in a hot or humid place. Do not leave printouts in direct sunlight or other bright places.
  - Do not allow any volatile organic solvent or vinyl chloride to touch printouts. Alcohol, plastic tape or film will cause the printout to fade.
- Do not stack your printouts on or under a diazo copy sheet. Also do not attach the printed surface to another printed surface. The printout may become discolored.
- To attach the printout to another piece of paper, use double-sided adhesive tape or water-based glue.

### Making copies of the last printout

Press the COPY button. The printer makes a copy of the last printout. The image of the last printout is retained in the printer's memory until you press the PRINT button again or turn the power off.

### To copy in different directions and sizes

You can copy the last printout in different directions and sizes except in SMALL mode.
Before pressing the COPY button, select the printing direction and size as described in "Selecting the Printing Direction/Image Size" (See this page.)

**Notes**

- If you press the COPY button immediately after turning the power on, the alarm buzzer will sound as nothing is stored in memory.
- In the SMALL mode, if you press the COPY button after you have pressed the PRINT button only once, the alarm buzzer will sound and the printer will not copy.

### To make multiple copies of the same printout

Press the COPY button as many times as necessary (maximum 11 copies including the first printout) while printing or copying the first printout. Each time you press the COPY button, a short buzzer sounds.

### To interrupt copying

Press either the OPEN or FEED button.

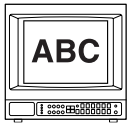
## Selecting the Printing Direction/ Image Size

You can make variations of printouts using the STD/SIDE selector, image size selectors and the DIP switches.

### Selecting the printing direction

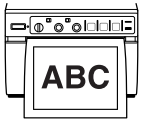
You can select the printing direction using the STD/SIDE selector.
**To print in the same direction as the one displayed in the video monitor,** set the selector to STD (standard).
**To print the image in the direction where the image is rotated by 90 degrees counterclockwise,** set the selector to SIDE.

### Image displayed on the video monitor

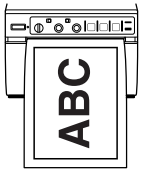



### Printouts

When set to the STD position




When set to the SIDE position




### Selecting the image size

You can print in normal or small size by changing the image size selector.
You can also obtain a printout of the image at the left or right, top or bottom of the video image on the monitor after it has been enlarged twice.

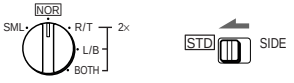




### Variations of printouts

#### Printouts obtained by the combination of the STD/SIDE selector and image size selector

The table in the right colum shows various printouts that can be obtained according to the combination of settings of the STD/SIDE selector and image size selectors.




In addition to variations in the right colum, the following printout variation is available.

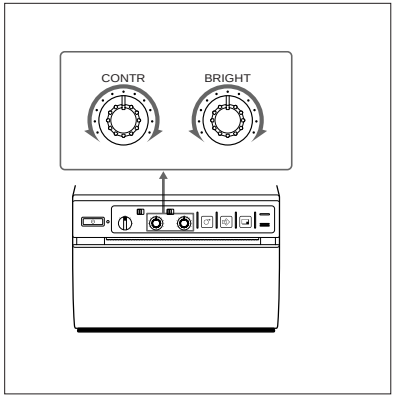
#### Negative printouts

You can make negative printouts by setting the POSI/NEGA switch on the front panel to the NEGA position.

| Image size selector position | Printing direction selector position | |
|---|---|---|
| | STD | SIDE |
| NOR (Normal) | | |
| SML (Small) | | |
| R/T (Right/Top) | | |
| L/B (Left/Bottom) | | |
| BOTH | | |

## Adjusting the Contrast and Brightness

You can adjust the contrast and brightness of the printout.




**Note**

To adjust the contrast and brightness while confirming the adjusted image on the video monitor, set DIP Switch 8 (OUTPUT) to EE (SW-UP).
After adjusting the contrast and brightness, be sure to reset DIP Switch 8 to THRU (SW-DOWN).
Since the video signal is directly input to the video monitor without being processed by the printer when the setting is THRU, you can monitor the video signal as it is input directly from the video equipment.

### To adjust the contrast

You can adjust the contrast of image using the CONTR control.
**To make the contrast stronger,** turn the CONTR control clockwise.
**To make the contrast weaker,** turn the CONTR control counterclockwise.

### To adjust the brightness

You can adjust the brightness of printouts using the BRIGHT control.
**To make the image brighter,** turn the BRIGHT control clockwise.
**To make the image darker,** turn the BRIGHT control counterclockwise.

**Note**

You cannot adjust the image once it has been captured in memory. Restore an image after adjustment by pressing the PRINT button.

## Remotely Controlling the Printer

You can remotely control the printer using the RM-91 remote control unit or the foot switch connected to the REMOTE connector on the rear panel.

Since the button on the remote control unit or foot switch functions exactly same as the PRINT button, pressing either of them during printing or copying results in an image being captured and immediately printed when DIP Switch 1 (INTERRUPT) on the rear panel is set to ON (SW-DOWN). (See page 24.)







# Precautions

### On safety

- Check the operating voltage before operation. Operate the unit only with a power source specified in “Specifications”.
- Stop operation immediately if any liquid or solid object falls into the cabinet. Unplug the unit and have it checked by qualified personnel.
- Unplug the unit from the wall outlet if you will not be using it for a long time. Disconnect the power cord by grasping the plug. Never pull the cord itself.
- Do not disassemble the cabinet. Refer servicing to qualified personnel only.
- Do not touch the cutting blade of the printer.
- Connect the power plug of the printer to a wall outlet with a protective earth terminal. The safety earth should be properly established.

### On operation

Do not turn the power off while the printer is printing. The thermal head may be damaged.

### On the printer carriage

Do not carry or move the printer when the paper roll is placed in the printer. Doing so may cause a malfunction.

### On installation

- Place the printer on a level and stable surface. If you use the printer with placed on an uneven surface, malfunction of the printer is likely to occur.
- Do not install the printer near heat sources. Avoid locations near radiators or air ducts, or places subject to direct sunlight or excessive dust, humidity, mechanical shock or vibration.
- Provide adequate air circulation to prevent heat build-up. Do not place the printer on surfaces such as rugs, blankets, etc., or near materials such as curtains and draperies.
- If the printer is subjected to wide and sudden changes in temperature, such as when it is moved from a cold room to a warm room or when it is left in a room with a heater that tends to produce large amounts of moisture, condensation may form inside the printer. In such cases the printer will probably not work properly, and may even develop a fault if you persist in using it. If moisture or condensation forms, turn off the power and allow the printer to stand for at least one hour.

# Maintenance

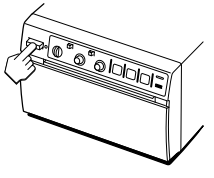
### Cleaning the cabinet

Do not use strong solvents to clean the printer. Thinner or abrasive cleansers will damage the cabinet.

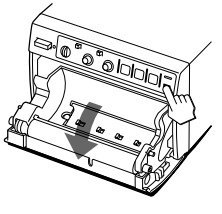
### Cleaning the thermal head

If the printout is dirty or white stripes appear on the printouts, clean the thermal head using the cleaning sheet supplied .

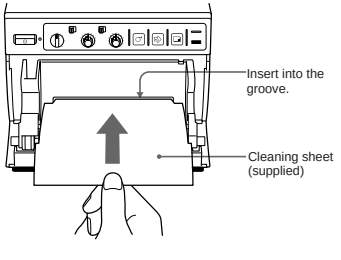
**1 Press the power switch to turn on the printer.**



**2 Press the OPEN button to open the door.**



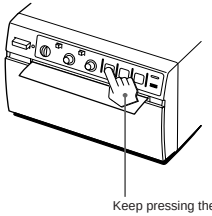
**3 Insert the cleaning sheet, with the black surface facing down, into the groove in paper tray.**



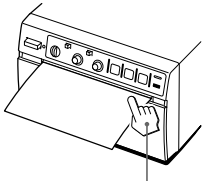

**Continue to next page →**

**4 Close the door by pushing it.**

**5 Press the FEED button and keep it pressed.**
When the buzzer sounds and the printer start ejecting the cleaning sheet, release the FEED button.



Keep pressing the FEED button.



When the buzzer sounds and the printer starts ejecting the cleaning sheet, release the button.

Cleaning is completed.

**6 Press the OPEN button to open the door and remove the cleaning sheet.**

**7 Close the door by pushing it.**

**Notes**

- Do not press the PRINT or COPY button while the cleaning sheet is in the printer.
- Clean the head only when necessary. If you clean the head too often, it may cause a malfunction.

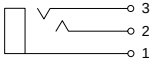
# Specifications

Power requirements and consumption
100 to 120 V AC, 50/60 Hz, 1.5 A
220 to 240 V AC, 50/60 Hz, 0.8 A
Operating temperature
5°C to 35°C (41°F to 95°F)
Operating humidity
20 % to 80 % (no condensation allowed)
Dimensions Approx. 154 × 105 × 260 mm (w/h/d) (6⅛ × 4¼ × 10¼ inches)
Mass Approx. 3.4 kg (7 lb 8 oz), Main unit only
Thermal head Thin-film thermal head (with built-in drive IC) 1280-dot drive
Gradation 256
Resolution (in WIDE 1 mode)
EIA: 1210 × 490 dots
CCIR: 1210 × 582 dots
Print size (in NOR and WIDE 1 mode)
STD mode
EIA: 94 × 72 mm
CCIR: 94 × 71 mm
SIDE mode
EIA: 126 × 96 mm
CCIR: 126 × 95 mm
Printing speed (in STD and NOR mode)
About 3.9 seconds/screen (at factory settings)
Picture memory
800 K × 8 bits for one frame
Input/output connectors
VIDEO IN (BNC)
EIA or CCIR Composite video signals
1.0 Vp-p, 75 ohms/high-impedance (EIA/CCIR automatically discriminated)
VIDEO OUT (BNC)
EIA or CCIR Composite video signals
1.0 Vp-p, 75 ohms, loop-through/EE switchable





REMOTE (stereo minijack)




1 GND
2 PRINT SIGNAL (TTL)
Input of LOW pulse over 100 msec. initiates print.
3 PRINT BUSY (TTL)
Goes HIGH during printing.

Supplied accessories
Paper roll (UPP-110HG) (1)
BNC ⟷ BNC connecting cable (1)
AC power cord (1)
Head cleaning sheet (1)
Media label (1)

**The following specifications are applied only to the UP-895MD/895CE models:**
Storage and transport temperature
–20°C to 60°C (–4°F to 140°F)
Storage and transport humidity
20 % to 80 % (no condensation allowed)
Protection against electric shock
Class I
Protection against harmful ingress of water
Ordinary
Degree of safety in the presence of flammable anesthetics or oxygen
Not suitable for use in the presence of flammable anesthetics or oxygen
Mode of operation
Continuous

Design and specifications are subject to change without notice.

# Troubleshooting

The following troubleshooting checks will help you correct the most common problems you may encounter with your printer. Before proceeding with these trouble check, first checks that the power cord is firmly connected. Should the problem persist, unplug the printer and contact your Sony dealer or local authorized Sony service facility.

| Symptom | Cause/remedy |
|---|---|
| White specks on the first few printouts. | When printing with a newly inserted roll of paper, dust on the surface of the paper may cause white specks on the printouts.<br>→ Feed the paper by pressing the FEED button until clean paper appears. (page 26) |
| Printing does not start when you press the PRINT button. | • Paper does not feed.<br>→ Is the paper slack?<br>→ Is the power turned on?<br>→ Are all connections correct?<br>→ Did you press the PRINT button twice in SMALL mode? (page 27)<br>• When the alarm buzzer sounds:<br>→ Has the thermal head overheated? The thermal head may overheat when the printer prints dark image continuously. In such a case, the EMPTY lamp blinks. Wait until the head cools down.<br>→ Is the video signal of the image input?<br>→ Is the paper loaded correctly?<br>• Paper feeds, but printing does not start.<br>→ Is the paper loaded with the thermo-sensitive side up? (page 26) |
| Black borders or missing portions around the printout. | This problem may result from the video signal input to the printer.<br>→ Change the setting of the DIP switches 6 and 7 (SCAN). (page 24) |
| Paper jam | • Open the door by pressing the OPEN button, then pull the jammed paper slowly and remove it.<br>• There is condensation inside the unit.<br>→ Moving the unit suddenly from a cold place to a warm place often results in condensation forming. In the event of condensation forming, remove the paper, turn off the power and allow the unit to stand for about one to two hours. |
| The printout is dirty. | The thermal head is dirty.<br>→ Clean the thermal head with the head cleaning sheet supplied with the unit. (page 31) |
| The printer stops printing when it continuously prints dark images. (The alarm buzzer sounds.) | This is likely to occur when the printer prints continuously 15 or more dark images. In such a case, the buzzer sounds. This is because a protective circuit guards against heat build-up in the thermal head. Stop printing for a while. |
| White lines or small letters on the screen are not printed clearly. | Is DIP Switch 11 (INPUT) set to B & W when the input signal is a black and white signal? (page 25) |
| Small squares appear over the whole screen. | Is DIP Switch 11 (INPUT) set to COLOR when the input signal is a color signal? (page 25) |
| The printout is too dark or too light. | • Is the DIP switch 12 (75Ω ) set correctly? (page 25)<br>• Is the PAPER TYPE switch in the paper tray set correctly? (page 23)<br>• Is the GAMMA switch in the paper tray set correctly? (page 23) |
| The printout seems stretched or enlarged. | The DIP switch 3 (ASPECT) is set to 1:1.<br>→ Set it to 4:3. (page 24) |

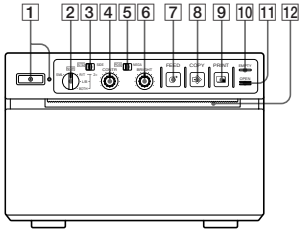




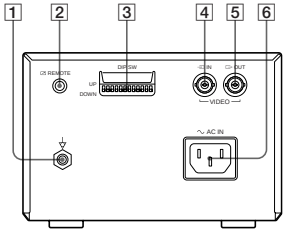
# Location and Function of Parts

For details, refer to the pages indicated in parentheses.

**Front**




**Back**




UP-895MD/895CE

## Front

1 **Power switch and lamp**
Turns the power on. The power lamp is lit while the power is on.

2 **Image size selector (29)**
Selects the size of the image to be printed.

3 **STD (standard)/SIDE selector (28, 29)**
Selects the printing direction.

4 **CONTR (contrast) control (30)**
Adjusts the contrast of the printouts.

5 **BRIGHT (brightness) control (30)**
Adjusts the brightness of the printouts.

6 **POSI(positive)/NEGA (negative) selector (29)**
Set this to the NEGA position to make negative printouts.

7 **FEED button (26, 27, 28, 32)**
Press to feed paper. The paper feeds as long as the FEED button is held down.
Pressing this button during printing results in an interruption of the printing.

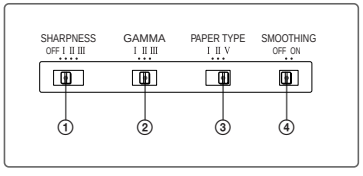
8 **COPY button (28)**
Prints another copy of the previous printout.

9 **PRINT button (27)**
Prints the image currently displayed on the video monitor. The image displayed when you press the PRINT button is stored in memory.

10 **EMPTY lamp (27)**
Lights when the printer is out of paper.

**Continue to next page →**

11 **OPEN button (26, 31)**
Opens or closes the door. Also, interrupts printing midway.
When the door is open, you can see the slide switches in the paper tray.




① SHARPNESS switch
Adjusts the sharpness of the printout.

② GAMMA switch
Sets the tone of the printouts (density gradation).

③ PAPER TYPE switch
Selects the paper type.

④ SMOOTHING switch
Selects the line density.

For detailed information on slide switches, see “Setting the Slide Switches on the Paper Tray” on page 22.

12 **Paper feeder and cutter**
Cuts the printing paper.

## Back

1 **⏚Equipotential terminal (only for UP-895MD/895CE)**
Used to connect to the equipotential plug to bring the various parts of a system to the same potential.
Refer to “Important safeguards/notice for use in the medical environments” on page 20.

2 **REMOTE connector (22, 30)**
Connect the RM-91 remote commander or the foot switch for controlling print operation from a distance.

3 **DIP SW (switches) (23)**
Sets the print modes and functions.

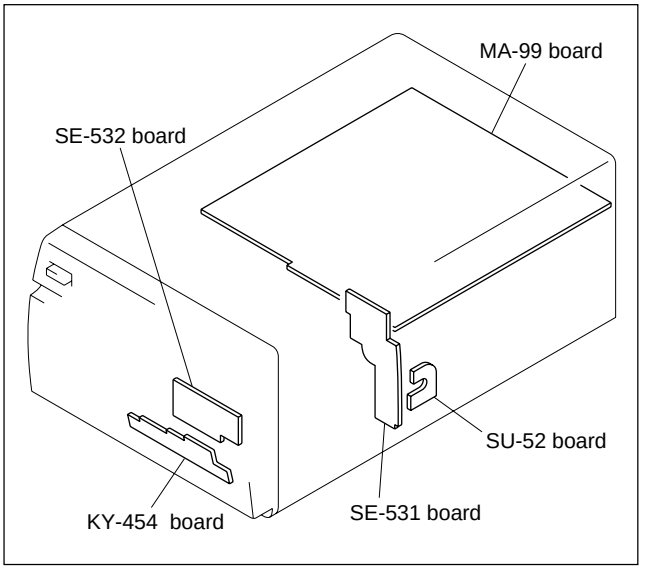
4 **VIDEO IN (input) connector (BNC type) (22)**
Connect to the video output connector of the video equipment.

5 **VIDEO OUT (output) connector (BNC type) (22)**
Connect to the video input connector of the video monitor. The output signal type depends on DIP switch 8 (OUTPUT).

6 **~AC IN (AC power input) connector (22)**
Connect to a wall outlet using the AC power cord supplied with the unit.

# Section 2
# Service Information

## 2-1. Board Layout

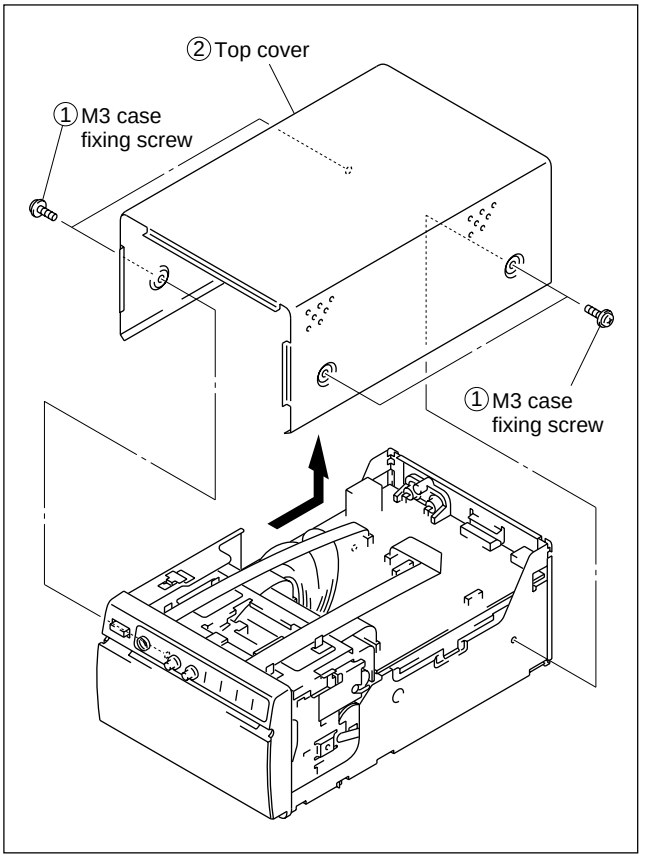



## 2-2. Disassembly

**Note**

Remove the top cover in the order shown in the figure during removal.

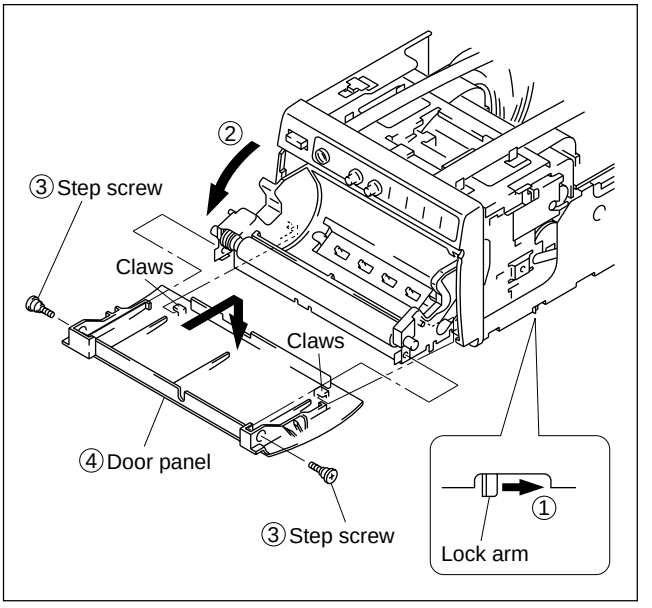
### Removal of Top Cover

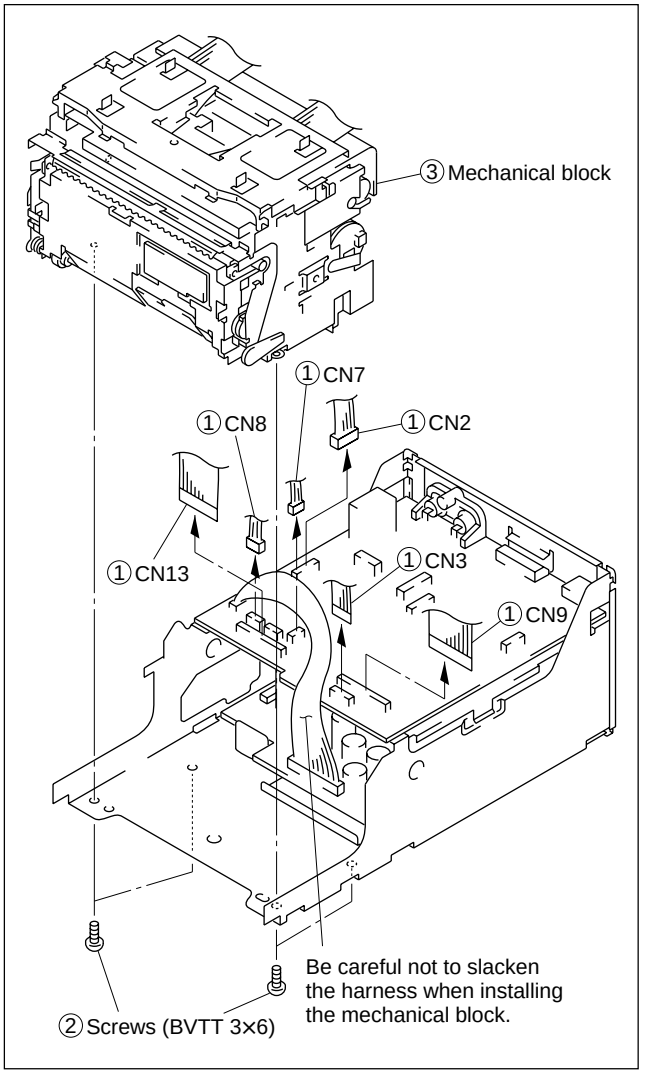


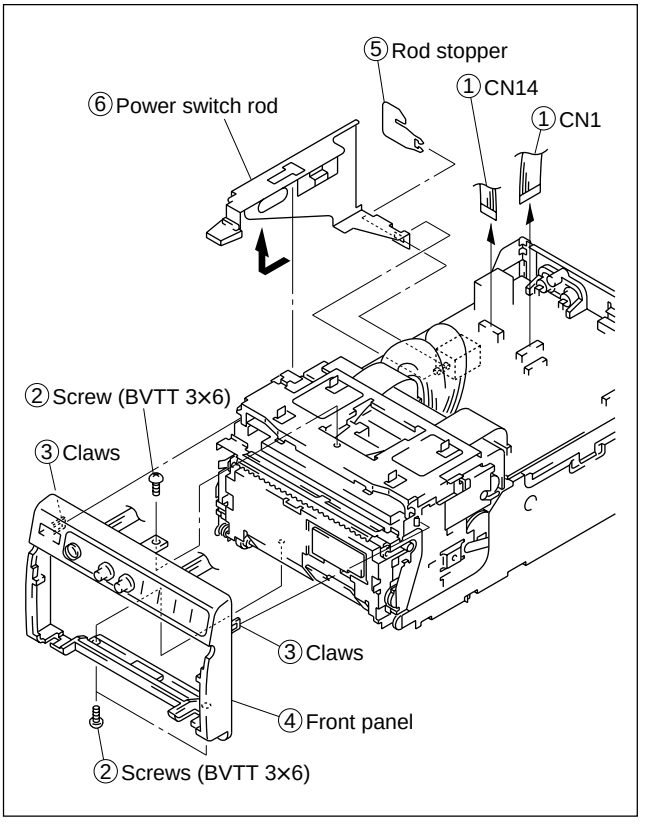
## 2-3. Removal of Major Parts

### 2-3-1. Removal of Mechanical Block

1. Remove the top cover. (Refer to Section 2-2.)

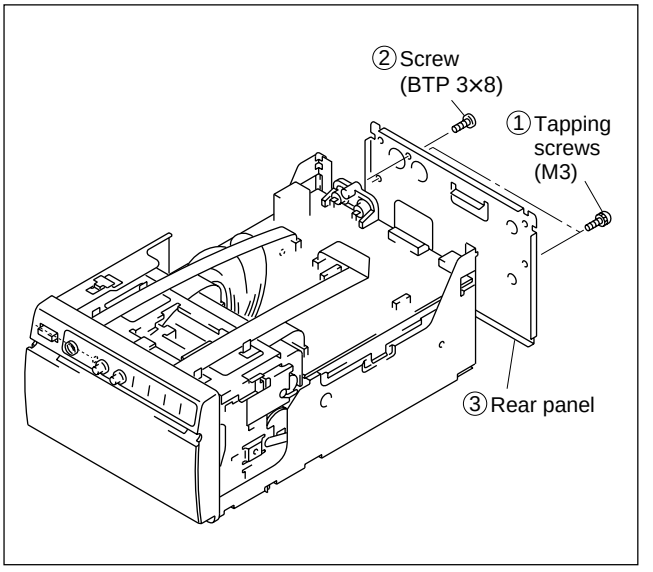


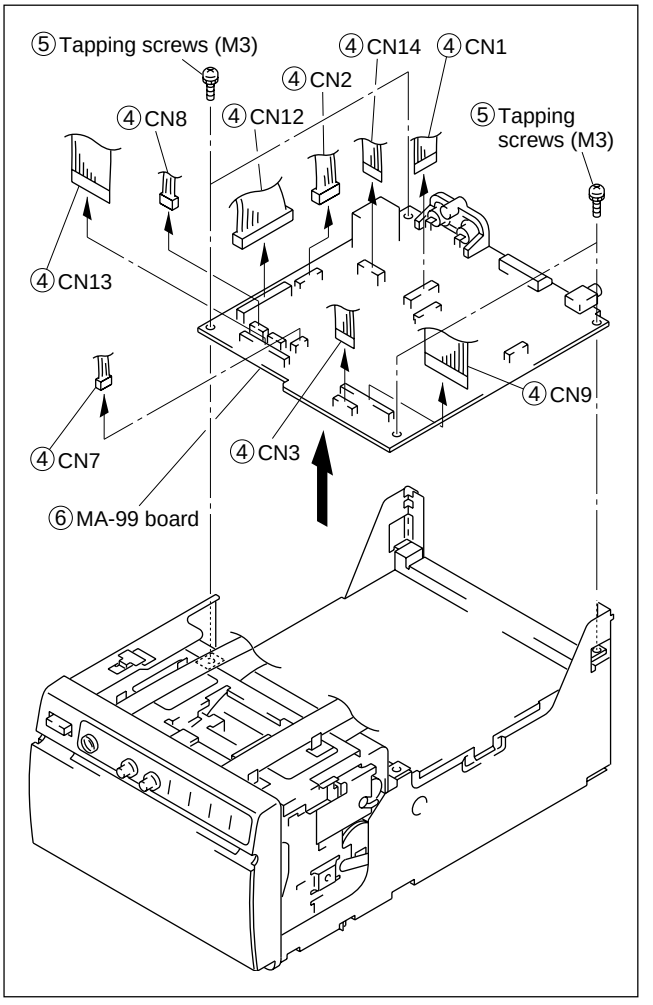



## 2-3-2. Removal of MA-99 Board

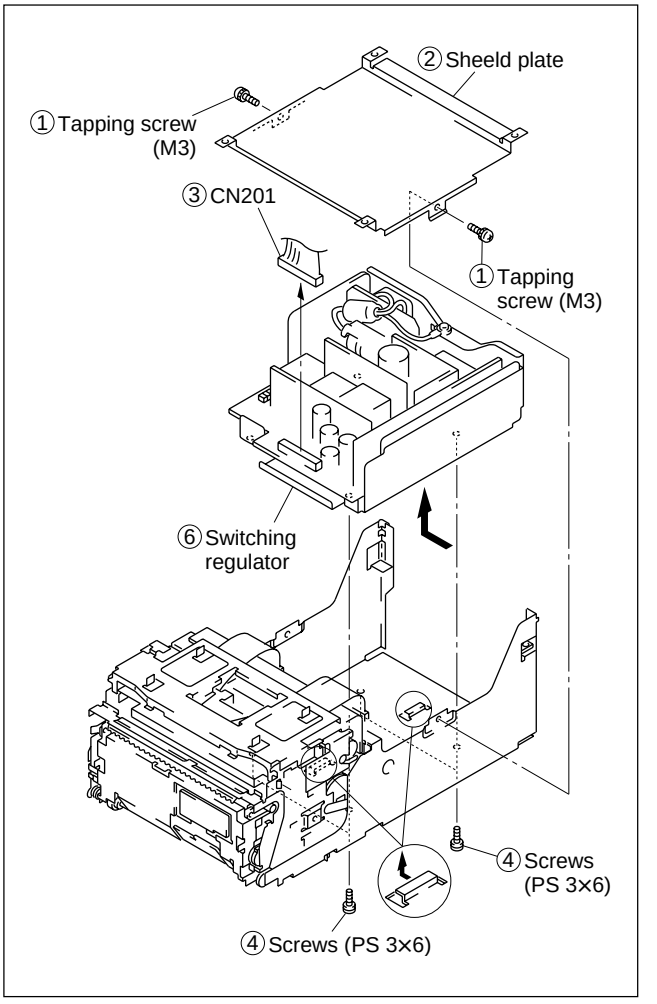
1. Remove the top cover. (Refer to Section 2-2.)



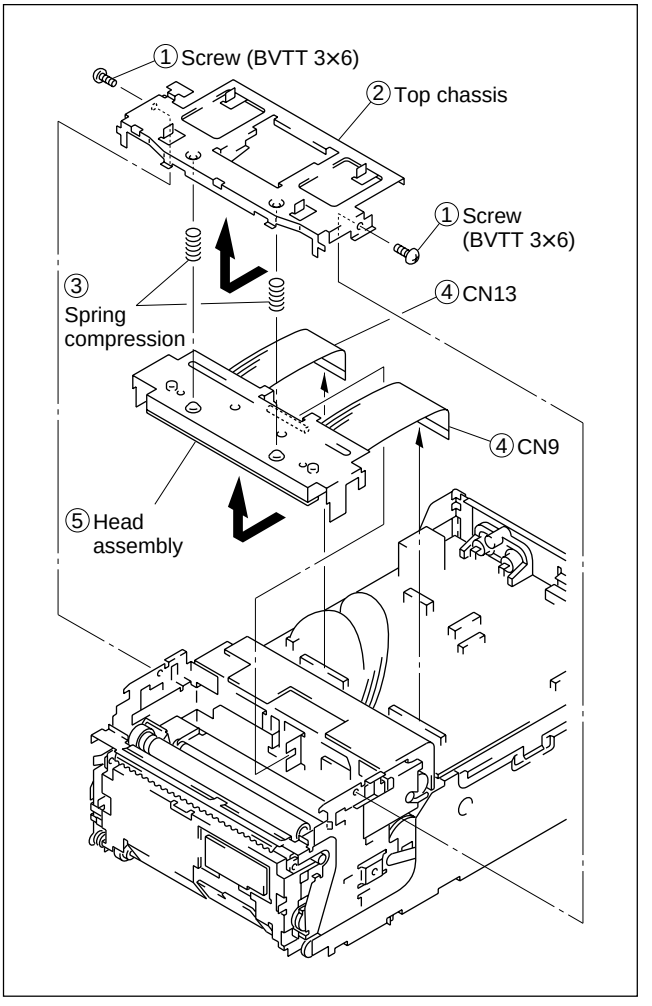

## 2-3-3. Removal of Switching Regulator

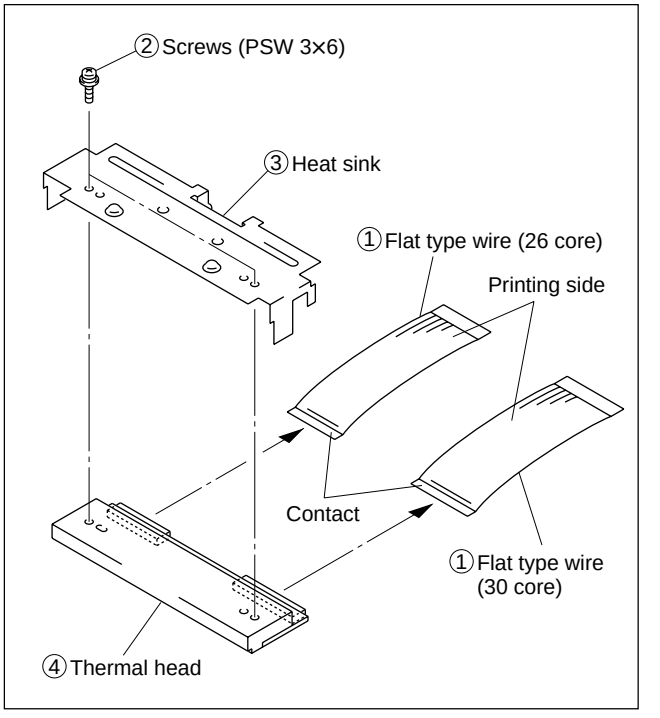
1. Remove the top cover. (Refer to Section 2-2.)
2. Remove the front panel, door panel and power switch rod. (Refer to Section 2-3-1.)
3. Remove the MA-99 board. (Refer to Section 2-3-2.)



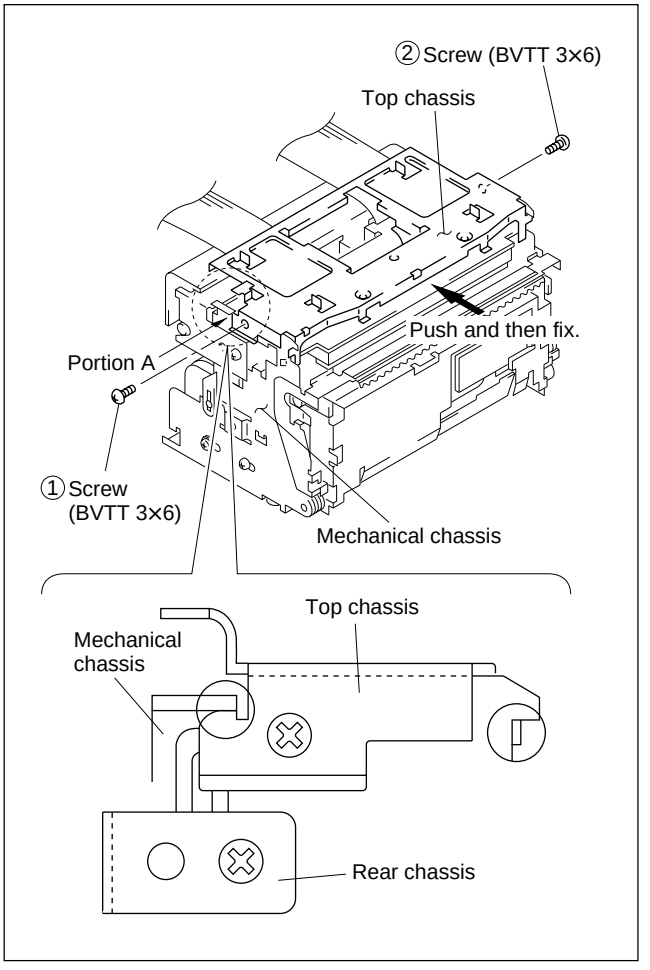
## 2-3-4. Removal of Thermal Head

1. Remove the top cover. (Refer to Section 2-2.)
2. Remove the front panel and power switch rod. (Refer to Section 2-3-1.)



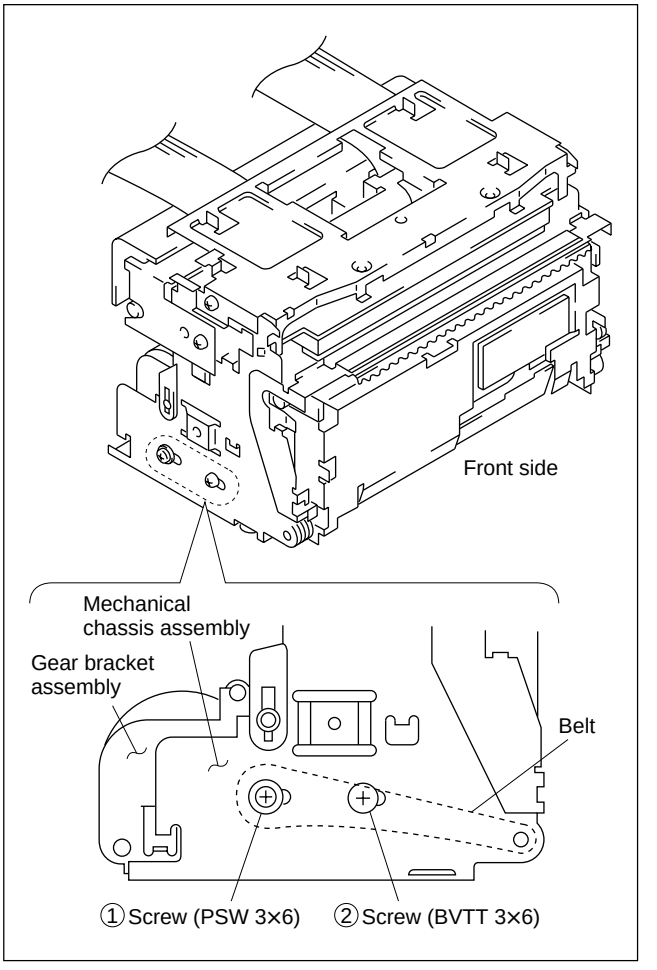



## 2-4. Tightening the Screws




**Note**

Confirm that no clearance exists between the mechanical chassis and top chassis.



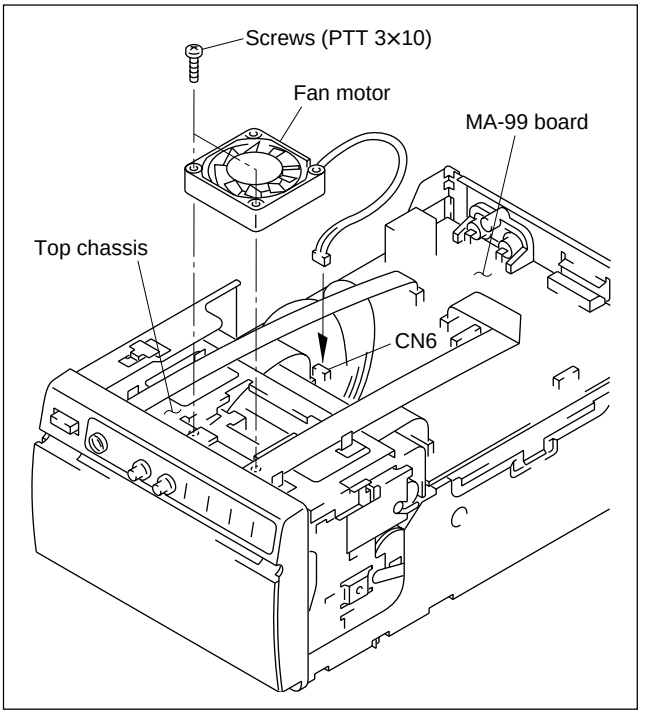

**Notes**

1. Be careful not to hold the gear bracket by hand when installing screws ① and ②.
2. Confirm that the belt tension is not loosened after screw installation.

## 2-5. Installation of Fan Motor

**Note**

Install the fan motor while paying the attention to the direction of the harness with the surface, to which the fan motor sticker is attached, down.

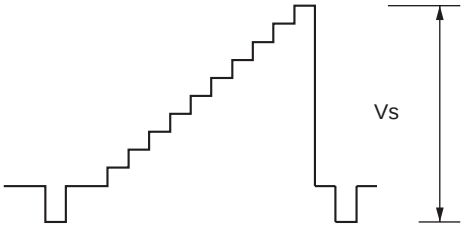
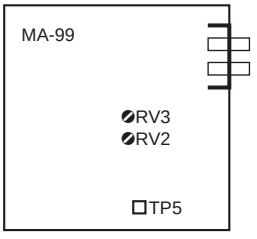


# Section 3
# Electrical Alignment

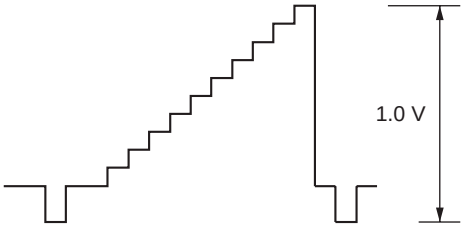
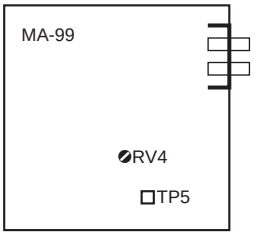
**[Equipment Required]**

- Oscilloscope
- Digital voltmeter
- 10 steps signal generator
  Tektronix 1410 or equivalents (For NTSC signal)
  Tektronix 1411 or equivalents (For PAL signal)

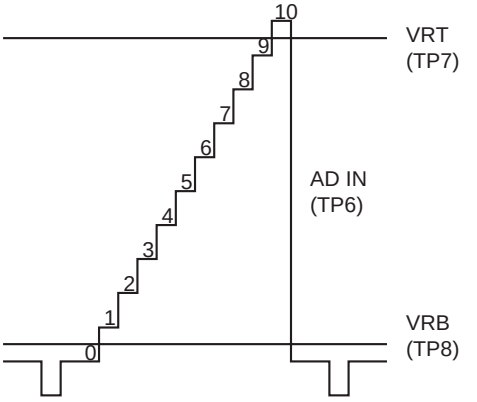
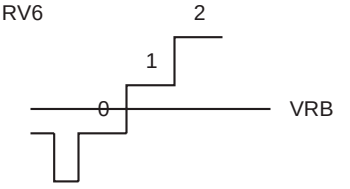
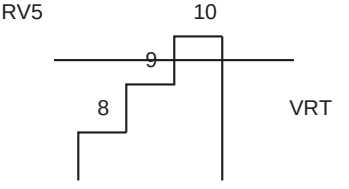
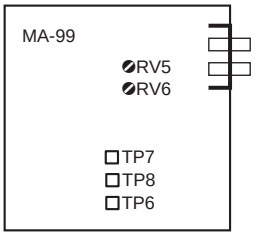
## 3-1. AGC Adjustment

| Machine condition for adjustment | Specification | Adjustments |
|---|---|---|
| • Input signal: 10 steps signal<br>• No monitor is connected.<br>• Set rear panel DIP switch ⑨ to up. (AGC-ON)<br><br>**Procedure**<br>1. Input a 10 steps signal and set DIP switch ⑫ to DOWN. Adjust RV3 (AGC REF) so that Vs is 700 mV.<br>2. Set DIP switch ⑫ to UP and adjust RV2 (AGC GAIN) so that Vs is 630 mV. | TP5 (AMP IN)/MA-99 (C-3) Output waveform<br>  <br>• Adjust so that Vs is 700 mV when AGC is ON and 75 Ω terminator is on.<br><br>• Adjust so that Vs is 630 mV when AGC is ON and 75 Ω terminator is off. | AGC REF adjustment<br>⊘RV3/MA-99 (C-2)<br>AGC GAIN adjustment<br>⊘RV2/MA-99 (C-2)<br>  |

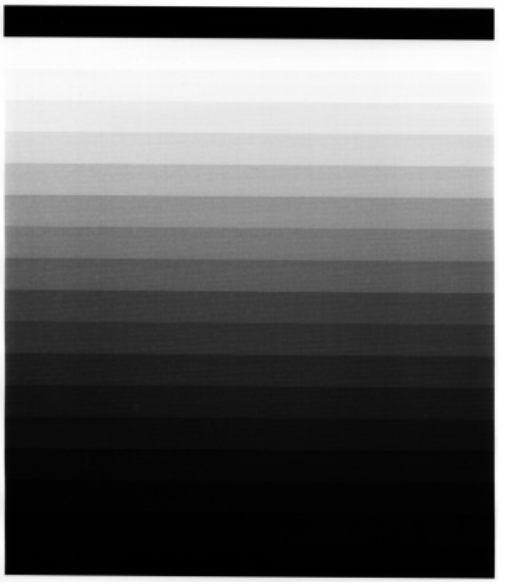
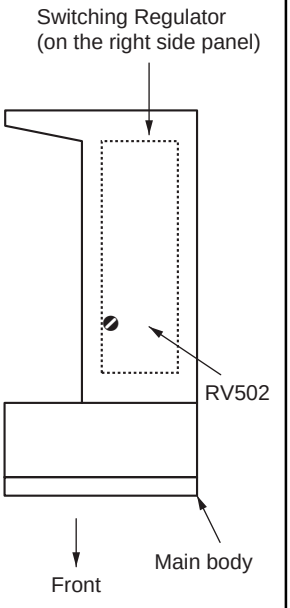
## 3-2. Video Level Adjustment

| Machine condition for adjustment | Specification | Adjustments |
|---|---|---|
| • Input signal: 10 steps signal<br>• In case, monitor is not connected, set DIP switch ⑫ on the rear panel to ON, if connected, set to OFF.<br>• Adjust RV4 (AGC OFF CONT) using 10 steps signal input. | TP5 (AMP IN)/MA-99 (C-3) Output waveform<br>  <br>Adjust so that video signal level is 1.0 V. | AGC OFF CONT adjustment<br>⊘RV4/MA-99 (C-2)<br>  |

## 3-3. Brightness and Contrast Adjustment

| Machine condition for adjustment | Specification | Adjustments |
|---|---|---|
| • Input signal: 10 steps signal<br>• In case, monitor is not connected, set DIP switch ⑫ on the rear panel to ON, if connected, set to OFF.<br>• Set CONTRAST and BRIGHT knobs to the center position on the front panel. | TP6 (AD IN)/MA-99 (B-3) Output waveform<br>TP7 (VRT)/MA-99 (B-3) Output voltage<br>TP8 (VRB)/MA-99 (B-3) Output voltage<br>  <br><br>  <br><br>Adjust RV6 so that mid voltage between 0 and 1 is equaled to the VRB voltage.<br>  <br><br>Adjust RV5 so that mid voltage between 9 and 10 is equaled to the VRT voltage. | C ADJ adjustment<br>⊘RV5/MA-99 (C-1)<br>B ADJ adjustment<br>⊘RV6/MA-99 (C-1)<br>  <br> |

## 3-4. Head Voltage Adjustment

| Machine condition for adjustment | Specification | Adjustments |
|---|---|---|
| • Input signal: nothing<br>• Set all DIP switches on the rear panel to DOWN.<br>• Set each switch on the front panel to NORM, STD, and POSI, respectively.<br>• Set the POWER switch to ON while pressing the PRINT and COPY buttons.<br>• Press the PRINT button to print a stair step pattern. |  <br>**Stair step**<br>Adjust RV502 so that a smooth gradation is obtained in 17 steps. | ⊘RV502/ Switching regulator<br>  |

## 3-5. Initialization of Print Count History

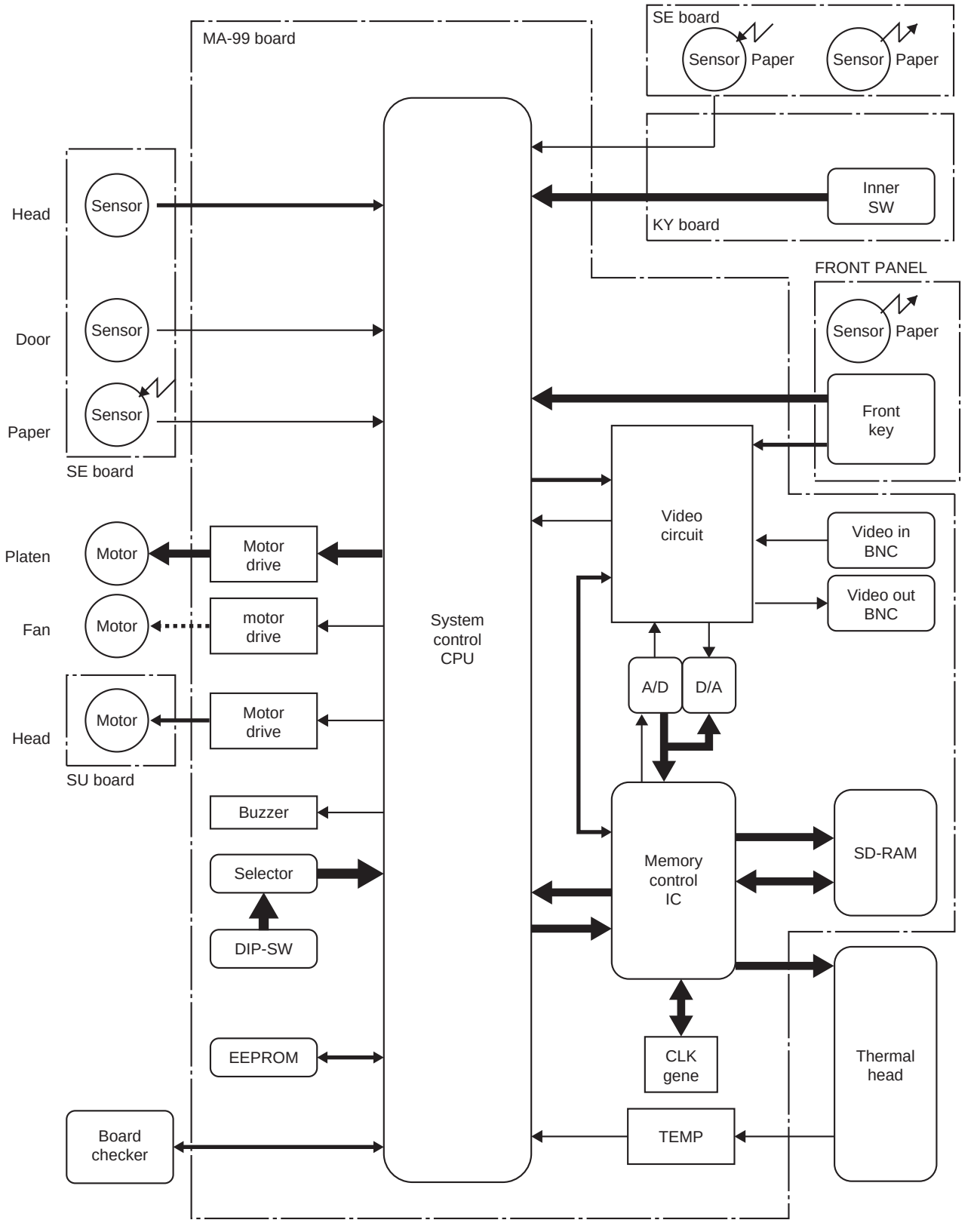
| Machine condition for adjustment | Specification | Adjustments |
|---|---|---|
| • Set the POWER switch to ON while pressing the PRINT, COPY, and FEED buttons. | Release the buttons when the buzzer sounds three times. The initialization of print count history is then completed (becomes zero in sheet count). | Nothing |

# Section 4
# Circuit Operation Description

### Outline

The electrical circuit of UP-895 mainly consists of the following blocks.

* Video circuit
  The input video signal is amplified using a video amplifier circuit to perform brightness, contrast, trap filter, and AGC processing.
* A/D and D/A converters
  The analog signal output from a video circuit is converted from analog to digital. The A/D-converted data is converted from digital to analog to output it to the outside.
* Memory and head control G/A
  Print data is fetched to frame memory (DRAM). Image data on the memory is also PWM-converted for image processing and sent to the thermal head.
* CLK generator
  This block generates the operation clock of memory and head control G/A.
* Frame memory (SDRAM)
  This block memorizes print data.
* Motor drive
  Each motor of a head, platen, and fan is driven according to the command from system control CPU.
* Sensor circuit
  This block detects the sensor values of a head, paper, cutter, door, and head temperature.
* System control CPU
  This block supervises and controls each block.




**Electrical Block Diagram of UP-895**

## 4-1. Video Circuit

### 4-1-1. BNC Input Connector - Trap Filter Circuit

A composite video signal is input from the BNC connector (VIDEO IN) to the MA-99 board. 75 Ω termination is turned on and off using a DIP switch. After that, the input signal branches into three paths. One is passed through a trap filter (FL1) for NTSC, and another is passed through a trap filter (FL2) for PAL. The other is not processed at all. These signals are input to analog selector 1 (IC1). Each signal is selected by a system control and input to video amplifier 1 (IC2).

### 4-1-2. nC-SYNC Generator Circuit

A nC-SYNC signal is generated from the SYNCOUT signal that is output from video amplifier 1 (IC2). The nC-SYNC signal is also used in an AGC circuit.

### 4-1-3. AGC Circuit

The signal from an analog selector 1 (IC1) branches into two paths. One is input to video amplifier 1 (IC2), and the other is input to the AGC circuit for detecting the peak of a signal. The gain is controlled by a contrast amplifier in video amplifier 1 (IC2). When an AGC function is set to ON, the peak voltage of the input video signal obtained by the AGC circuit is controlled by a system control (IC304) so that it is output from analog selector 2 (IC5). When it is set to OFF, the reference voltage is controlled by a system control (IC304) so that it is output from analog selector 2 (IC5). The gain is controlled by inputting the voltage to video amplifier 1 (IC2).

### 4-1-4. Brightness and Contrast Control

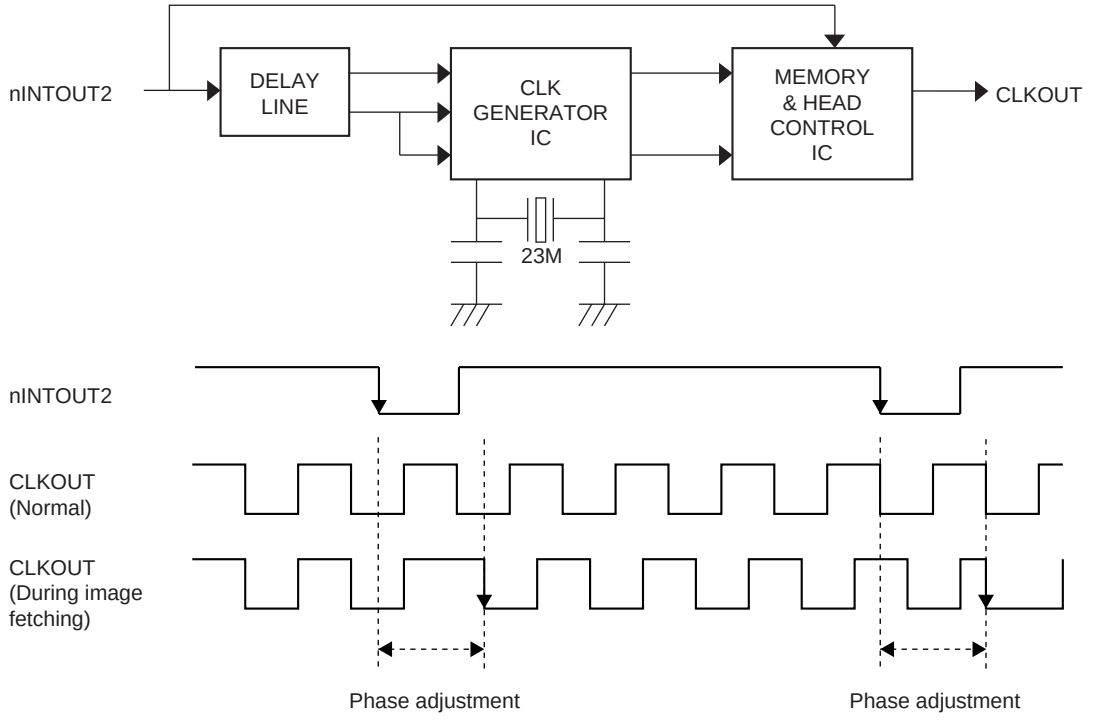
The video signal output from video amplifier 1 (IC2) is input through a buffer (Q220) to video amplifier 2 (IC6). For contrast control, the gain is controlled by inputting the voltage obtained using the volume on the front panel to video amplifier 2 (IC6).
The video signal output from video amplifier 2 (IC6) is input through a low-pass filter to the brightness control amplifier (Q7). For brightness control, the gain is controlled by inputting the voltage obtained using the volume on the front panel to the brightness control amplifier (Q7).

### 4-1-5. A/D Conversion and D/A Conversion

The video signal output from video amplifier 2 (IC6) is converted into a digital signal using an A/D converter and stored in memory by a memory and head control circuit.
The A/D-converted signal is converted into a video again using a D/A converter, and a sync signal is added using analog selector 3 (EE signal). Moreover, the sync signal is sent to analog selector 4 and output from the BNC connector (VIDEO OUT) to the outside. A relay (RY1) is used to switch THRUE and EE signals and controlled by a system control.

## 4-2. Clock Generator Circuit

A clock is generated by attaching a 23 MHz external oscillator (X500) to the clock generator circuit (IC505). This clock is phase-adjusted at the falling edge of an H sync pulse (nINTOUT2) when fetching a video signal. The noise contained in the clock signal generated at that time is eliminated by the internal circuit of a memory and head control circuit (IC501) and a delay circuit (IC504). By using the clock signal as a main clock, memory control is performed during image fetching.




**Clock Generator Circuit**

## 4-3. Memory and Head Control Circuit

The memory and head control circuit (IC501) consists of the following blocks.
The operation in each block is determined by the serial data from a system control (IC304).

(1) Register for storing the serial data from system control (IC304)
(2) Frame memory write and read control
(3) Thermal head control
(4) Sync signal processing circuit
(5) Line memory (for calculation and print)
(6) Sharpness calculation circuit
(7) Thermal storage correction calculation circuit
(8) Count correction calculation circuit
(9) Image scaling calculation circuit

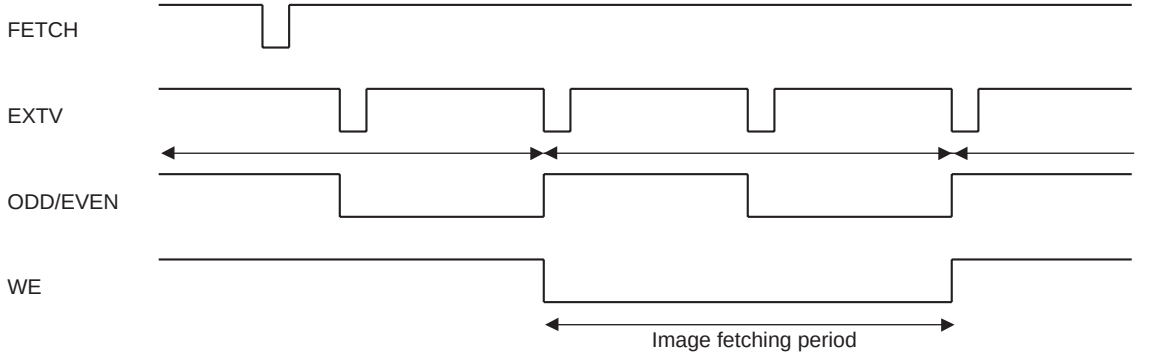
### 4-3-1. Reading the Serial Data from System Control

There are eight types of data that a system control (IC304) sends to IC501. Registers for storing each data exist respectively. The type of a register in which data is stored is selected by combination of “high” and “low” levels of signals that are input to pins 11, 13, and 14 of IC501.

| IC501-11pin | IC501-13pin | IC501-14pin | Register to be selected |
|---|---|---|---|
| L | L | L | Gamma data |
| L | L | H | Gamma data |
| L | H | L | Specifies the memory and print ranges. |
| L | H | H | Emphasizes the edge and sets the memory and print modes. |
| H | L | L | Count correction data |
| H | L | H | Sync signal processing parameter |
| H | H | L | Thermal history correction and other mode setting |
| H | H | H | Test pattern step width setting |

### 4-3-2. Writing in Frame Memory

The next image data of one frame is written in the frame memory (IC503) when a fetch pulse is input from a system control (IC304) to pin 1 of IC501. The UP-895 uses a 64M-SDRAM (one word is 8 bits) as image memory. The sampling frequency is 23 MHz, and the memory space is 4096 × 2048.



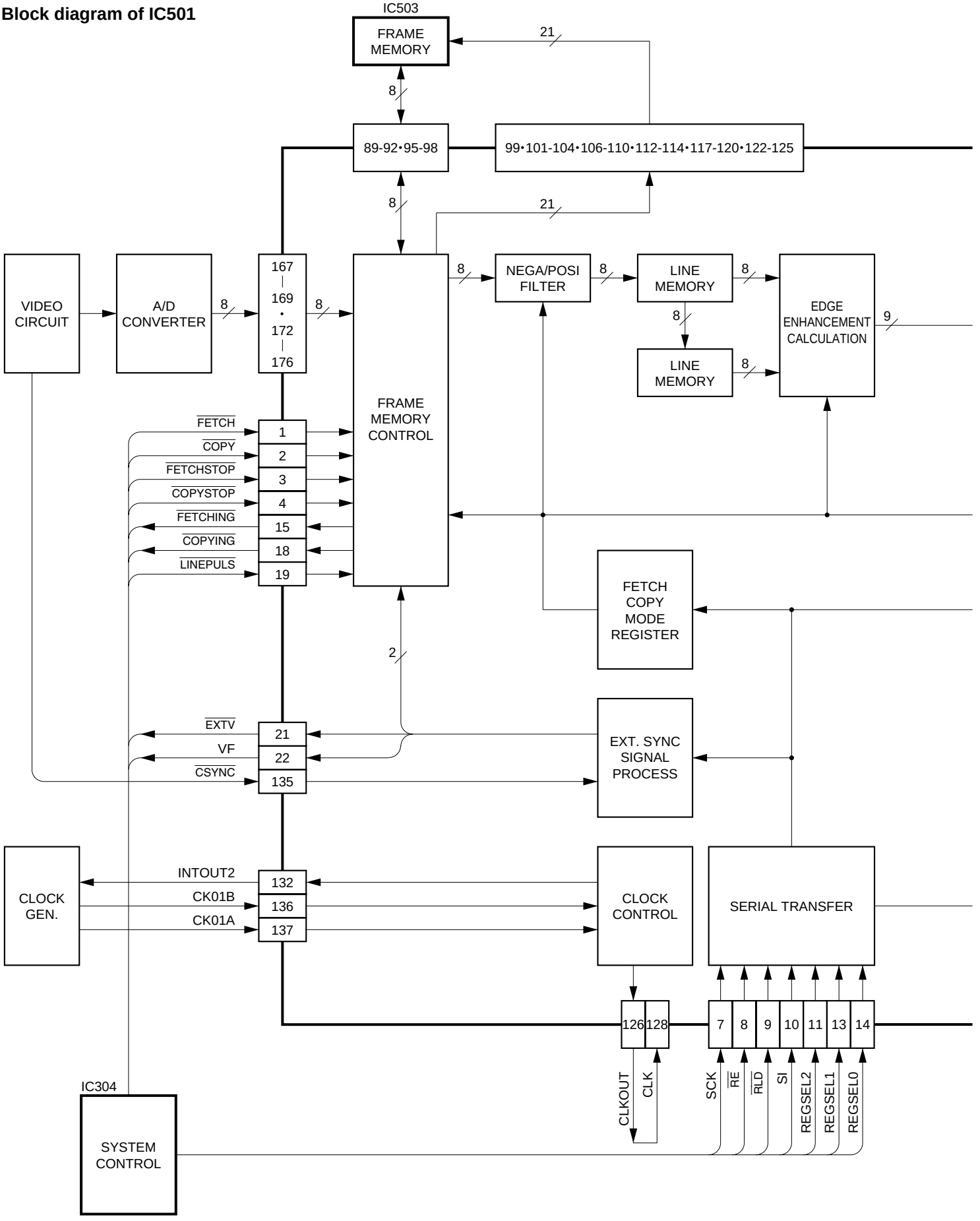

### 4-3-3. Transfer from Frame Memory to Line Memory

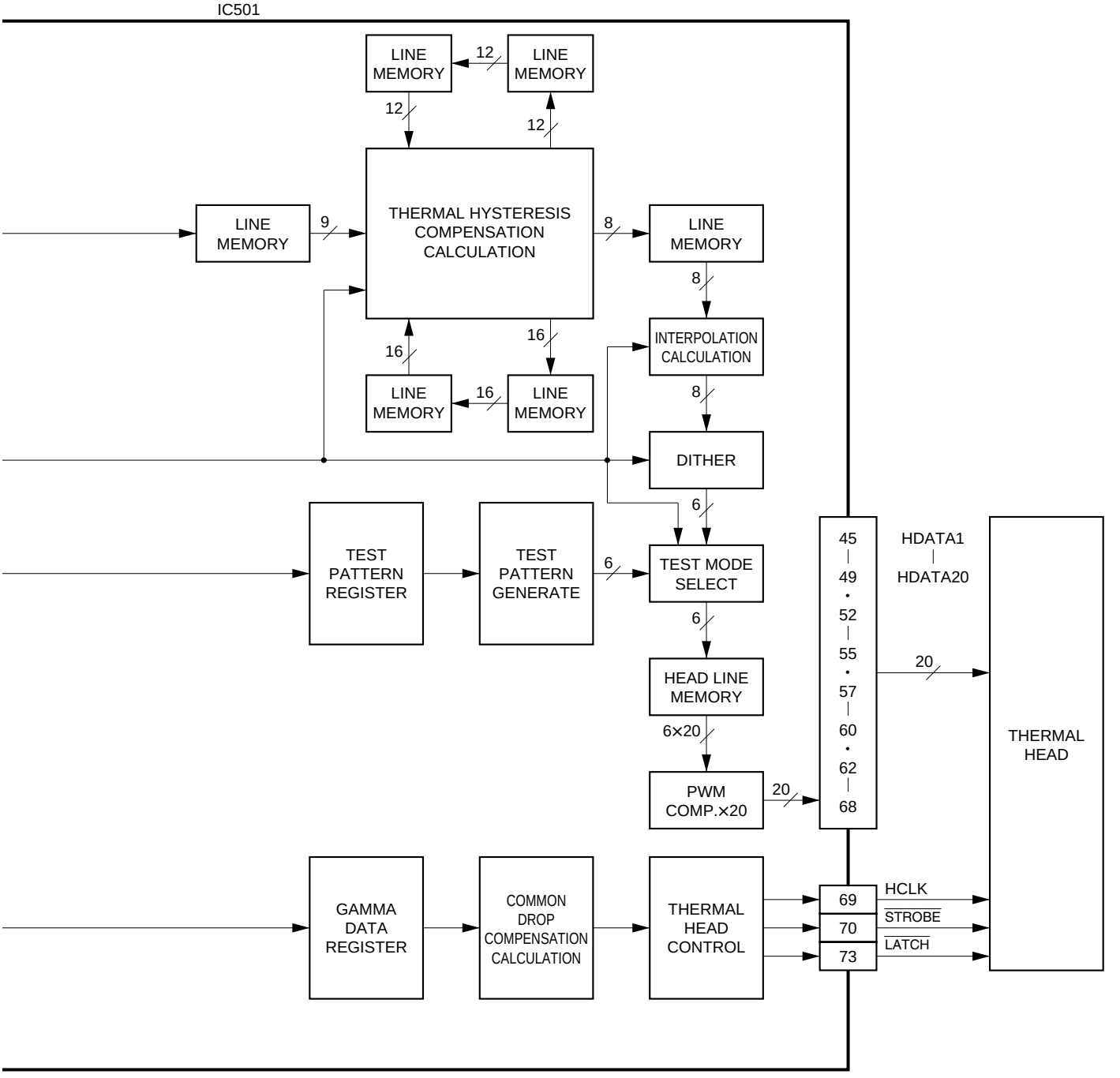
IC501 sets a COPYING signal to “L” so as to enter the print operation when a COPY pulse is input from a system control (IC304) to pin 2 of IC501. To perform printing, the one-line data selected from frame memory must be transferred to the head line memory in IC501. Data is transferred when a LINEPULS is input to pin 15 of IC501. IC501 reads necessary print data from the frame memory in the order corresponding to the print range and print direction specified by the mode setting from a system control. Next, IC501 stores the print data in the head line memory after edge emphasizing, thermal history correction, and interpolation.

### 4-3-4. Thermal Head Control and One-Line Memory

All thermal head controls are performed by IC501. Built-in head line memory is used when transferring print data to the thermal head. For more details, refer to Section 4-5. Thermal Head Section.

## Block diagram of IC501




IC501
LINE MEMORY
12
LINE MEMORY
12
12
LINE MEMORY
9
THERMAL HYSTERESIS COMPENSATION CALCULATION
8
LINE MEMORY
8
INTERPOLATION CALCULATION
16
16
LINE MEMORY
16
LINE MEMORY
8
DITHER
6
TEST PATTERN REGISTER
TEST PATTERN GENERATE
6
TEST MODE SELECT
6
HEAD LINE MEMORY
6×20
PWM COMP.×20
20
45
49
52
55
57
60
62
68
HDATA1
HDATA20
20
THERMAL HEAD
GAMMA DATA REGISTER
COMMON DROP COMPENSATION CALCULATION
THERMAL HEAD CONTROL
69
70
73
HCLK
STROBE
LATCH

## 4-4. System Control Section

The system control section mainly consists of a microcomputer (IC304) and performs the following processing.

### 4-4-1. Reading of Keys

IC304 monitors the PRINT, OPEN/CLOSE, COPY, FEED, and REMOTE keys on the door panel. Each key is activated when the falling edge of a signal is detected.

| IC304 | Signal name |
|---|---|
| 73pin | nDOOR_KEY |
| 74pin | nPRINT_KEY |
| 75pin | nCOPY_KEY |
| 76pin | nFEED_KEY |

### 4-4-2. Reading of Function Switches

IC304 monitors the setting of a front slide switch, inner slide switches, and a rear DIP switch and reflects its setting on the operation.

Front slide switch (on the front panel)

| IC304 | Function | Operation |
|---|---|---|
| 80pin | POSI/NEGA | L: NEGA<br>H: POSI |
| 1pin | STANDERD/SIDE | L: STANDARD<br>H: SIDE |
| 79pin | PRINT SIZE | 0.00 V: SMALL<br>1.25 V: NORMAL<br>2.50 V: ZOOM1<br>3.75 V: ZOOM2<br>5.00 V: ZOOM1&2 |

Inner slide switches (S1 through S4)

| IC304 | Function | Operation |
|---|---|---|
| 5pin | SMOOTH | L: NORMAL<br>H: HIGH |
| 2pin | SHARPNESS | 0.00 V: NORMAL<br>2.50 V: SOFT<br>5.00 V: HARD |
| 4pin | PAPER TYPE | 0.00 V: TYPE I<br>1.67 V: TYPE II<br>3.33 V: TYPE III<br>5.00 V: TYPE IV |
| 3pin | GAMMA | 0.00 V: TONE I<br>2.50 V: TONE II<br>5.00 V: TONE III |

Rear DIP switch (S300)

| IC304-66, 69pin SWSEL[3-0] | Function | IC304-66, 69pin:SWDATA | |
|---|---|---|---|
| | | L (Default) | H |
| 0 | ①INTERRUPT | ON | OFF |
| 1 | ②POST FEED | ON | OFF |
| 2 | ③ASPECT | 4:3 | 1:1 |
| 3 | ④MEMORY | FRAME | FIELD |
| 4 | ⑤DIRECTION | NORMAL | REVERS |
| 5 | ⑥SCAN1 | WIDE1 | WIDE 2 |
| 6 | ⑦SCAN2 | – | NORMAL |
| 7 | ⑧THRUE/EE | THRUE | EE |
| 8 | ⑨AGC | OFF | ON |
| 9 | ⑩RESERVED | – | – |
| 10 | ⑪INPUT | B&W | COLOR |

## 4-4-3. Platen Motor Control

A stepping motor for platen driving controls the forward and reverse rotation and rotation speed when a system control (IC304) controls driving transistors (Q404 through Q407).

| IC304 | Signal line | State | | | |
|---|---|---|---|---|---|
| 22pin | PM1 | L | L | H | H |
| 23pin | PM2 | H | H | L | L |
| 24pin | PM3 | L | H | H | L |
| 25pin | PM4 | H | L | L | H |
| | | Forward rotation ◄——► Reverse rotation | | | |

## 4-4-4. Head Up and Down Control

A head up/down DC motor is driven by its driving circuit (IC400). The DC motor can rotate in the forward and reverse directions. It is controlled by a system control (IC304). The head also has three positions. The head position is detected using optical head position sensors (photo-interrupters PH21 and PH22) and read by a system control (IC304).

Operation of head up/down motor

| Head motor | IC304-28pin | IC304-27pin | Operation |
|---|---|---|---|
| UP | L | H | Raises the head. |
| DOWN | H | L | Lowers the head. |
| STOP | H | H | Stop |

Condition of head position sensor

| Position | IC304-17pin | IC304-16pin | Condition |
|---|---|---|---|
| TOP | H | H | Unlocks the door. |
| MIDDLE | L | H | Wait (Usual) |
| BOTTOM | H | L | Print |

## 4-4-5. Monitor of Door Sensor

The door position is detected using an optical door position sensor (photo-interrupter PH32) and read by a system control (IC304).

Condition of door position sensor

| Position | IC304-20pin | Condition |
|---|---|---|
| CLOSE | L | The door is closed. |
| OPEN | H | The door is open. |

## 4-4-6. Monitor of Paper Sensor

Whether thermosensible paper is properly put in this unit is detected using two pairs of optical paper sensors (phototransistors PH31 and PH12) and read by a system control (IC304).

Condition of paper sensor

| IC304-18pin | IC304-19pin | Condition |
|---|---|---|
| H | H | Paper exists. |
| For except “H” | For except “H” | No paper |

## 4-4-7. Monitor of Head Temperature Sensor

The change in the resistance value of the thermistor inside a thermal head is converted into a voltage using a head temperature detector circuit (IC401) and read by a system control (IC304). The voltage value is converted from analog to digital. Density (gamma) correction, fan motor control for head cooling, and head-in cleaning discrimination are performed according to the digital value.

## 4-4-8. Control of Head Fan Motor (for Head Cooling)

The head fan motor is operated when a system control (IC304) controls driving transistors (Q400 and Q403). The head fan motor is turned on when the head temperature is more than approximately 50 ˚C or during printing.

Operation of head fan motor

| IC304-26 pin | Operation |
|---|---|
| L | OFF |
| H | ON |

## 4-4-9. Control of Video Circuit Section

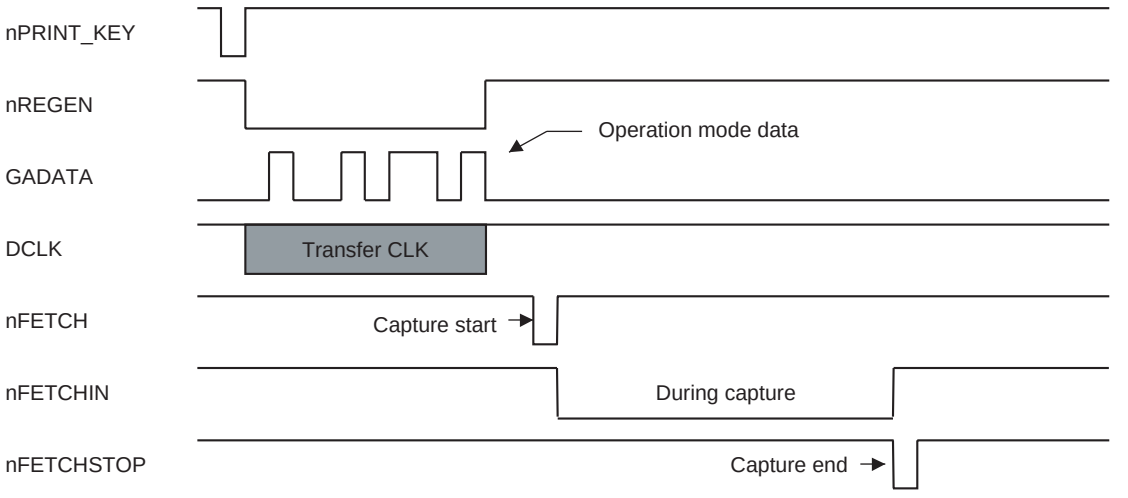
A system control (IC304) controls the video circuit section as shown in the table below.

| IC304 | I/O | Function | |
|---|---|---|---|
| 77pin | O | Switches THRUE and EE signals. | L: ON<br>H: OFF |
| 59pin | O | Sets the trap filter to ON or OFF. | L: ON<br>H: OFF |
| 60pin | O | Selects NTSC or PAL. | L: When an NTSC signal is input<br>H: When a PAL signal is input |
| 53pin | O | Sets the AGC function to ON or OFF. | L: ON<br>H: OFF |

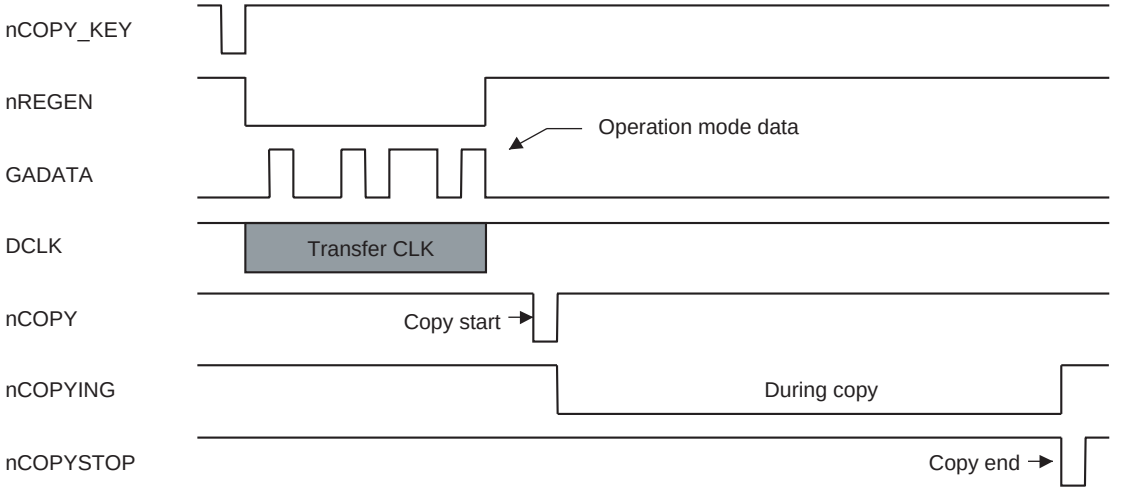
## 4-4-10. Control of Memory and Head Control Circuit

A system control transfers operation mode data in serial to the memory and head control circuit (IC501). It then instructs the start and end of the fetch operation (that fetches a video signal to memory) and copy operation (that feeds the memorized image to the head). The copy operation is carried out when the COPY key is pressed. The fetch-to-copy operation is carried out when the PRINT key is pressed.

[Fetch mode]

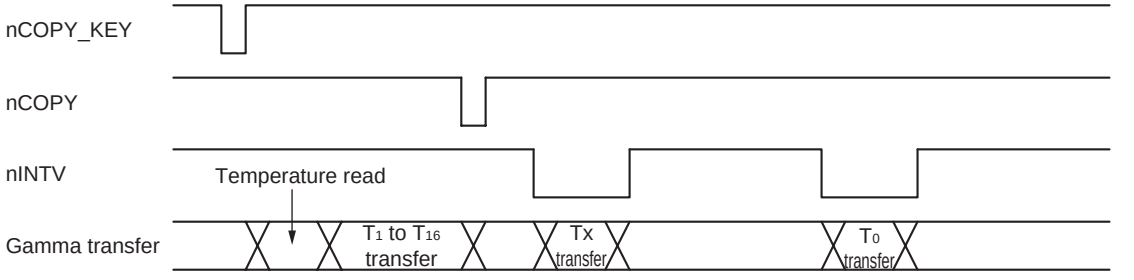



[Copy mode]



## 4-4-11. Gamma Correction and Thermal Storage Correction

To correct the gamma fluctuations due to the temperature change in a head, a system control reads the head temperature and transfers the gamma data for controlling the stair density to a memory and head control circuit (IC501). The gamma data consists of 17 data ($T_0$, and $T_1$ through $T_{16}$). Data $T_1$ through $T_{16}$ are transferred during print start. During printing, Tx is transferred at the falling edge of an nPRNT_PULSE pulse in the first line, and $T_0$ is transferred at the falling edge of an nPRNT_PULSE pulse in the second line. If the first line is printed by $T_0$, the change in color becomes insufficient. Therefore, the fist line is printed by Tx obtained when $T_0$ is corrected. The second or later lines are printed by $T_0$.



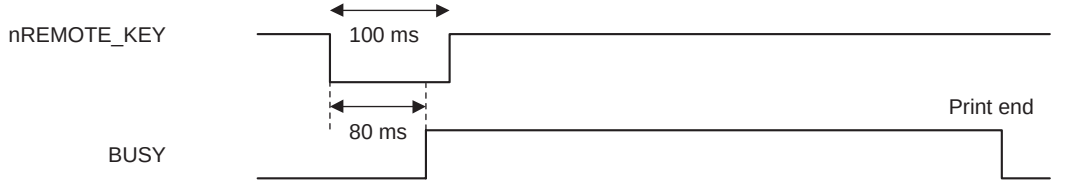

## 4-4-12. Discrimination of Video Signal to be Input

A system control (IC304) discriminates a video signal by the signals below that are output from a memory and head control circuit (IC501).

| IC304 | Signal line | Discrimination | |
|---|---|---|---|
| 21pin | nEXTV | V period is long:<br>V period is short: | PAL<br>NTSC |
| 52pin | V | Fixed in L or H:<br>L and H are repeated: | Non-interlacing<br>Interlacing |

## 4-4-13. Remote Interface

A system control (IC304) accepts a signal when a low pulse of more than 100 msec is input to the remote terminal (J300). After about 80 msec from the falling edge of the input pulse, the system control (IC304) activates a BUSY signal. The BUSY signal is cleared after printing is completed.



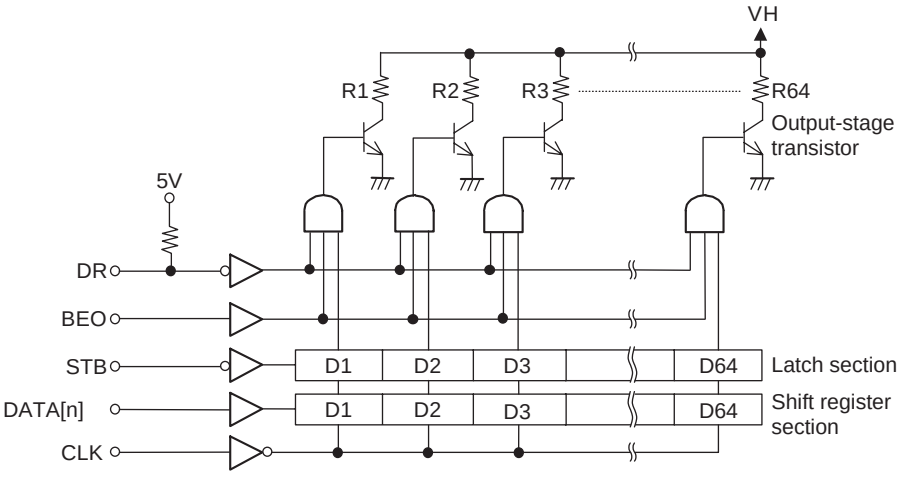

## 4-4-14. Storage of Print Count History

A system control (IC304) stores the history of print count in EEPROM (IC305). The data is not erased even if the power is turned off. Therefore, this makes it possible to monitor the history of print count since shipping of products. This method can be displayed using the service person mode (self-diagnostic function). Fore more details, refer to Section 6.

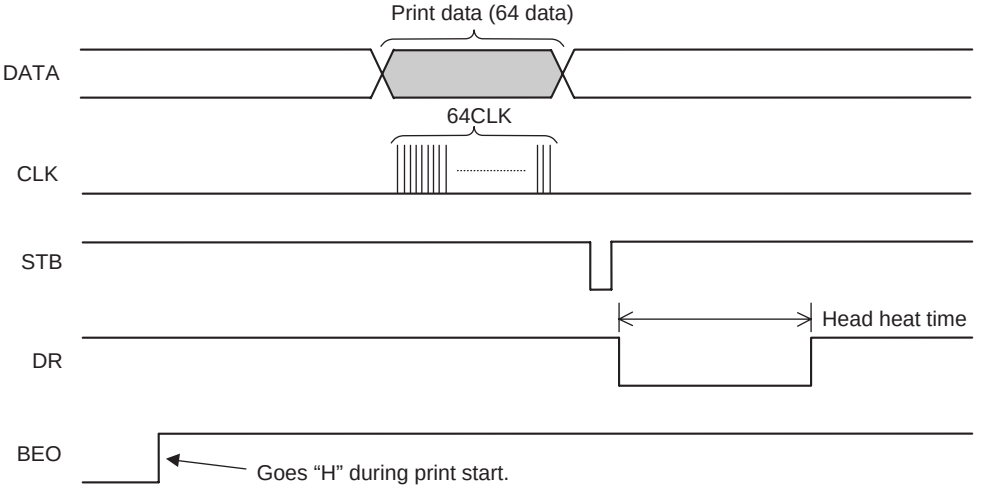
## 4-5. Thermal Head Section

### 4-5-1. Structure

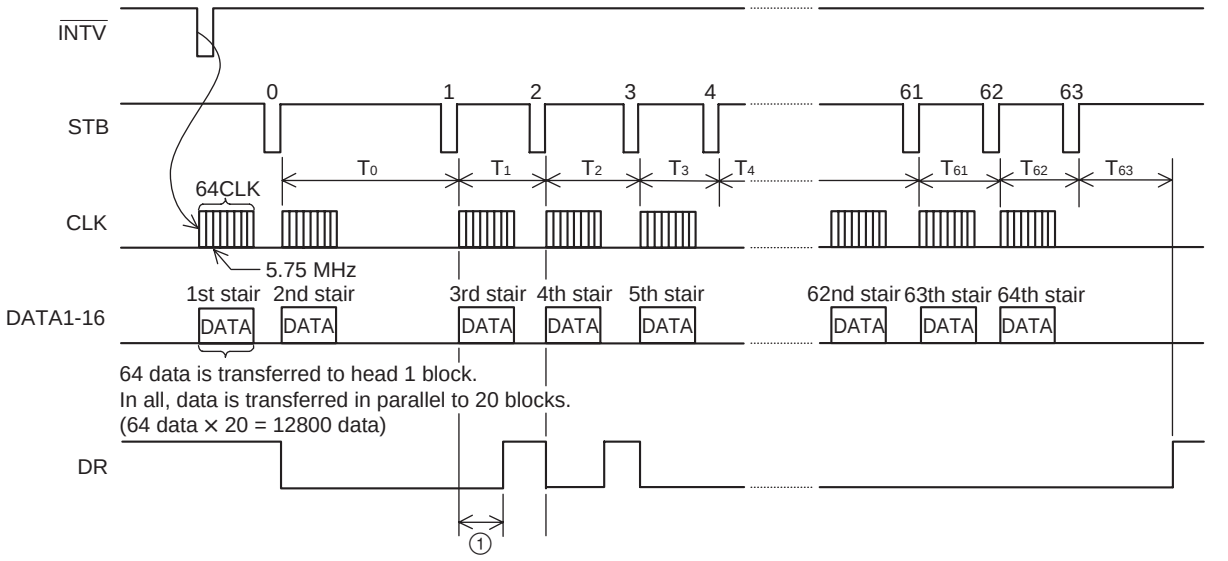
The thermal head consists of one-line 1280 dots (64 bits × 20). It includes the 20 pairs below. (The DATA input is ten DATA [20:1], and other terminals are common.)




**Internal Circuit Configuration of Thermal Head (One-port)**




**Timing Chart**




**Stair Generation**

## 4-5-2. Basic Operation

Various signals are input from the memory and head control circuit (IC501) to the head. This section describes the operation in only one block. (The operation in other blocks is also the same as described above.)

(1) Print data (64 data) is input to the shift register section in synchronization with a clock.
(2) When a STB pulse is input, the data input in step (1) is moved from the shift register section to the latch section.
(3) When a DR pulse is input, the output-stage transistors are turned on and off by the "H" and "L" data in the latch section. The resistors then heat up and the thermosensitive paper changes color. The amount of heat generated is controlled by changing the length of the DR pulse, so the color darkness of the printing on thermosensitive paper can be changed.

**Note**

The BEO terminal goes from "L" to "H" when starting the print and goes from "H" to "L" when print is ended.

## 4-5-3. Stair Generation

As explained in the last section on basic operation, the darkness of the printing can be controlled using a DR pulse, it is also possible to change the darkness by changing the "H" and "L" data input to the latch section. The method is described below.

(1) One-line image data recorded in image memory SDRAM (IC503) is fetched to the line memory in IC501 every print operation one line (nPRINT_PULSE) by controlling a memory and head control circuit (IC501).
(2) The data fetched to the line memory is input to the stair generator circuit in IC501. The stair data generator circuit outputs the 8-bit data fetched to the line memory as stair data 1 through 64. If 8-bit data is 128, "H" data is output to the head in the 1st through 32nd stairs of data 1 through 16. "L" data is output in the 33 rd and later stairs.
(3) The data output from the data generator circuit to the head is transferred to the shift register section of the head in synchronization with the clock output from IC501.

(4) When IC501 inputs STB pulse "1" to the head, the 1st stair data is transferred to the latch section and the next 2nd stair data is input to the shift register section. At the same time, the DR pulse goes low, and the "H" data input as the 1st stair data turns on the corresponding output-stage transistors to heat up the resistors. The "L" data turns off the corresponding output-stage transistors so that the resistors do not heat up.
This operation is carried out 1 through 64 times. If "H" data is sent 1 through 64 times, the resistors generate heat at all times and the printing is the darkest possible. If "H" data is sent 1 through 32 times, the printing is an intermediate stair (gray). In such a way, the stair data with the number of sending times corresponding to the size of the original 8-bit data is sent to the head, and the intermediate stair is represented by the number of heat generation times in a heat generator.

(5) Thus, by controlling the time until the next data is transferred to the latch, the darkness of intermediate stairs can be controlled. In other words, the darkness of each intermediate stair can be changed by changing the STB intervals ($T_1$, $T_2$, $T_3$, $T_4$, $T_5$ ••• $T_{64}$) shown in the figure.
In this unit, IC502 controls intervals $T_1$ to $T_{64}$ according to the γ characteristics of paper. This is called a γ characteristic control.

(6) If the DR pulse is also controlled as described in "4-5-2. Basic Operation", finer stairs can be expressed.
Portion ① in the figure is generated when the T interval of a STB pulse is shorter than the transmission time to the shift register.

Therefore, this unit provides the smooth expression of intermediate stairs by controlling the STB pulse's T interval and DR pulse.

## 4-5-4. Temperature Correction

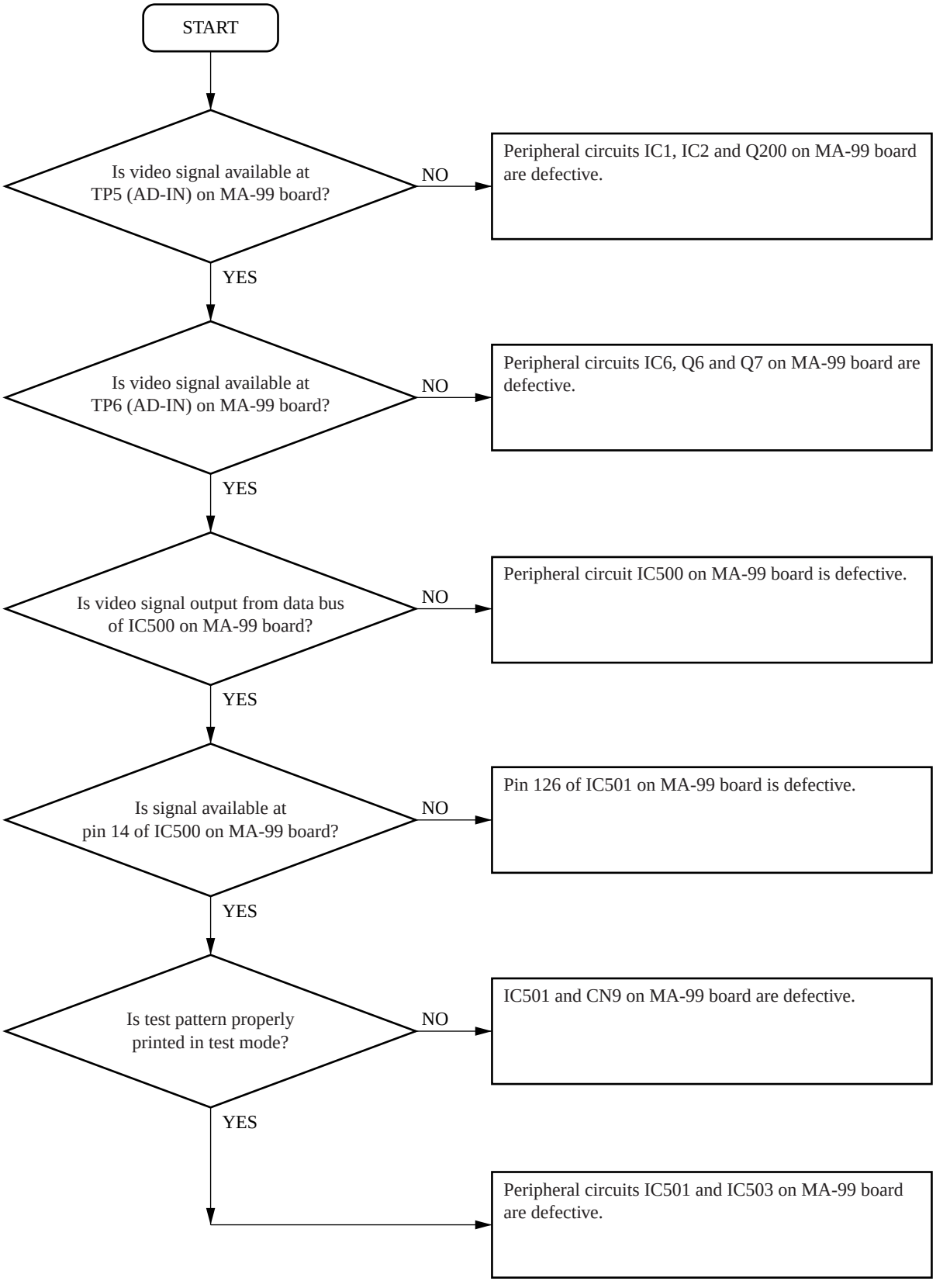
As explained in "4-5-3. Stair Generation", intermediate stairs are expressed by controlling the STB pulse's T interval and DR pulse. However, the print energy required for thermosensitive paper varies with the room temperature and with the heat generated by and stored in the printing head during continuous printing. Correction is thus required.
In this unit, a system control (IC304) measures the temperature change of the head from the thermistor incorporated into the thermal head and converts it into 8-bit head temperature data. Moreover, IC304 reflects it on the γ characteristic control of IC501 and corrects the density change for the temperature.
As in stair generation, IC501 performs the temperature correction by controlling the STB pulse's T interval and DR pulse. In other words, when the temperature rises, the STB pulse's T interval and DR pulse decrease. When the temperature falls, the STB pulse's T interval and DR pulse increase.

## 4-5-5. Line Count Correction

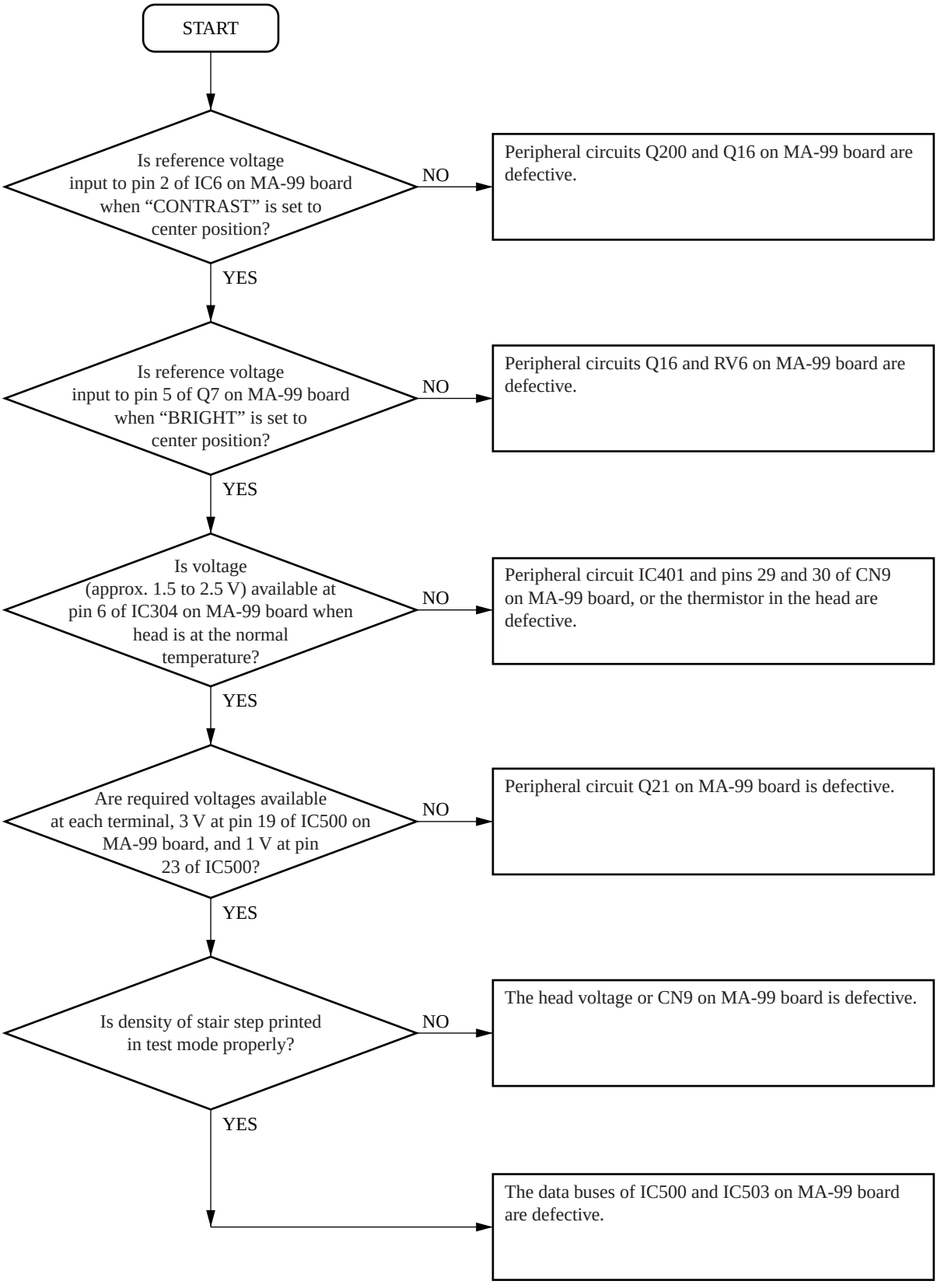
The total current flowing through the head when all resistors of the head are turned on differs from the case where they are turned on partially. Therefore, an error occurs in the energy applied to each resistor. If printing operation is performed without correcting this error, as a result, there is a line on the print where the number of resistors in which the head is turned on changes rapidly. This unit has IC501 that incorporates this correction circuit.

# Section 5
# Troubleshooting

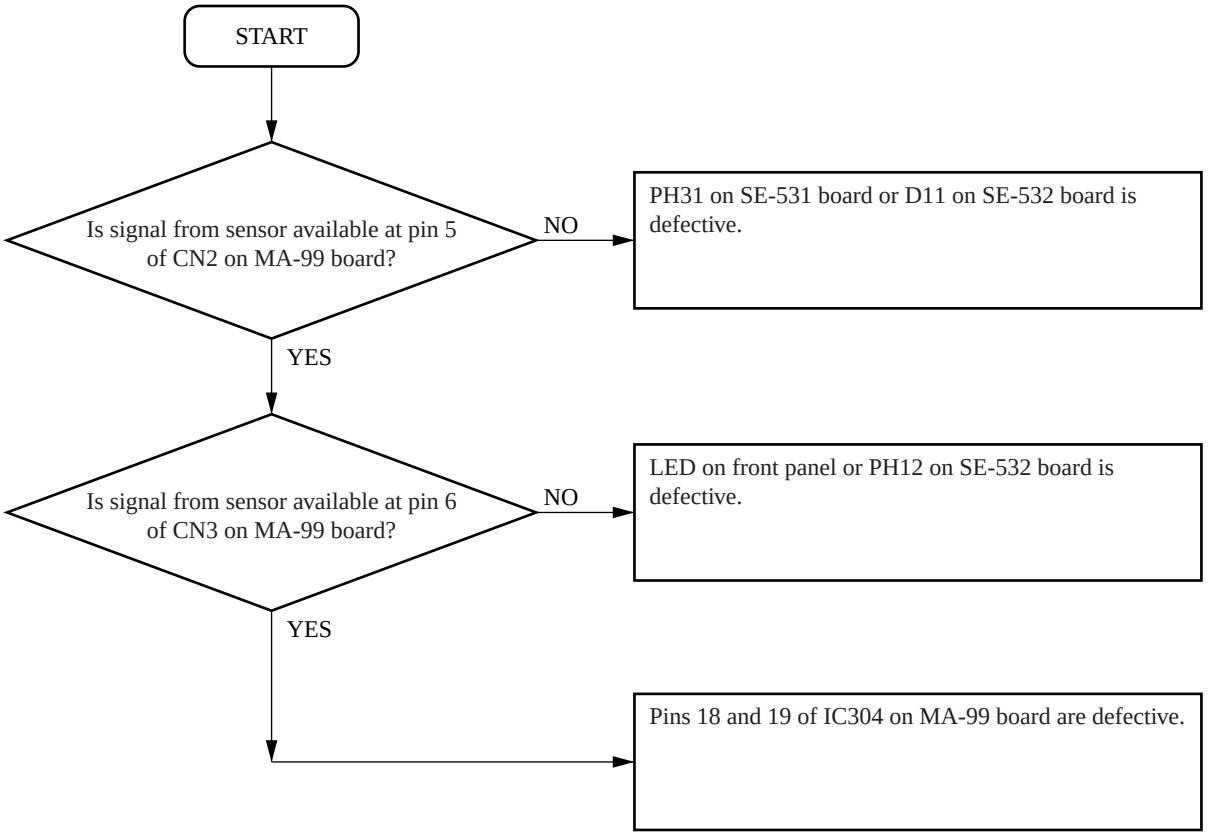
## 5-1. Print is Faulty


START
Is video signal available at TP5 (AD-IN) on MA-99 board?
NO
Peripheral circuits IC1, IC2 and Q200 on MA-99 board are defective.
YES
Is video signal available at TP6 (AD-IN) on MA-99 board?
NO
Peripheral circuits IC6, Q6 and Q7 on MA-99 board are defective.
YES
Is video signal output from data bus of IC500 on MA-99 board?
NO
Peripheral circuit IC500 on MA-99 board is defective.
YES
Is signal available at pin 14 of IC500 on MA-99 board?
NO
Pin 126 of IC501 on MA-99 board is defective.
YES
Is test pattern properly printed in test mode?
NO
IC501 and CN9 on MA-99 board are defective.
YES
Peripheral circuits IC501 and IC503 on MA-99 board are defective.

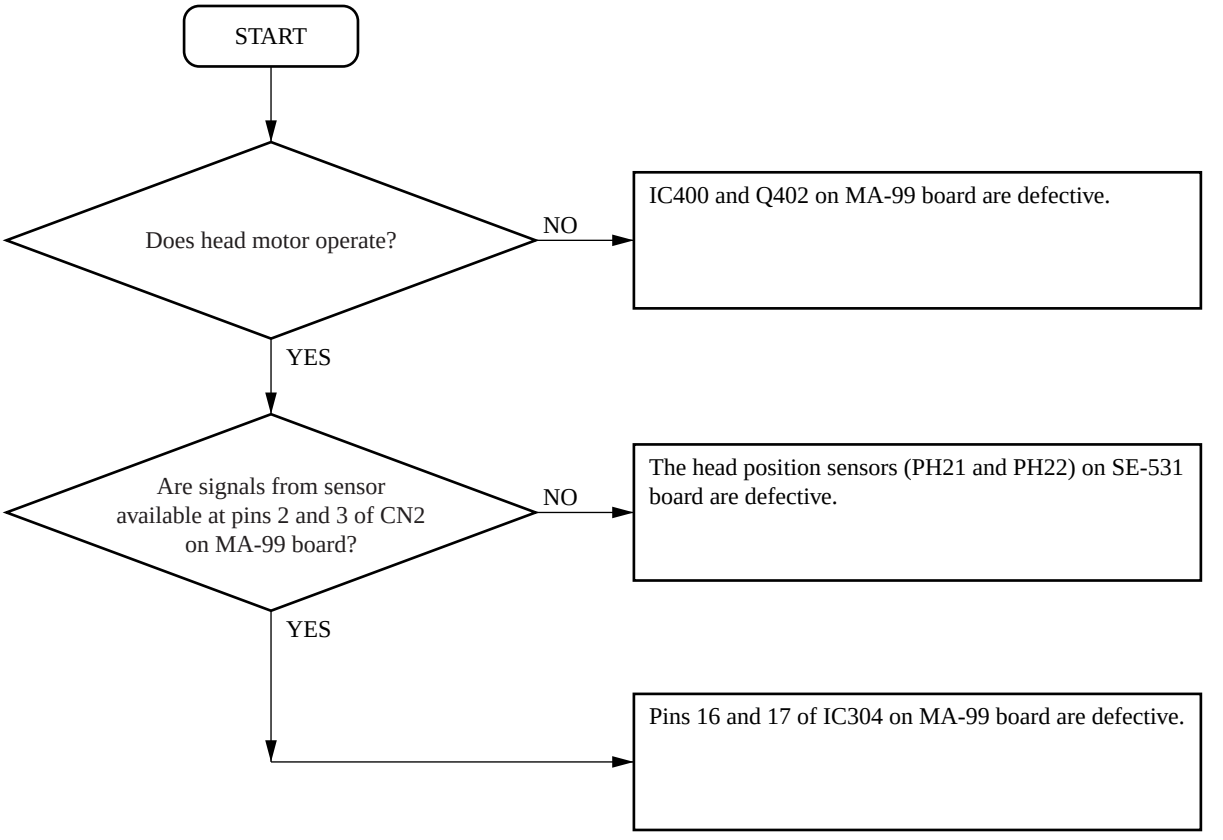
## 5-2. Print is Too Dark or Too Light


START
Is reference voltage input to pin 2 of IC6 on MA-99 board when “CONTRAST” is set to center position?
NO
Peripheral circuits Q200 and Q16 on MA-99 board are defective.
YES
Is reference voltage input to pin 5 of Q7 on MA-99 board when “BRIGHT” is set to center position?
NO
Peripheral circuits Q16 and RV6 on MA-99 board are defective.
YES
Is voltage (approx. 1.5 to 2.5 V) available at pin 6 of IC304 on MA-99 board when head is at the normal temperature?
NO
Peripheral circuit IC401 and pins 29 and 30 of CN9 on MA-99 board, or the thermistor in the head are defective.
YES
Are required voltages available at each terminal, 3 V at pin 19 of IC500 on MA-99 board, and 1 V at pin 23 of IC500?
NO
Peripheral circuit Q21 on MA-99 board is defective.
YES
Is density of stair step printed in test mode properly?
NO
The head voltage or CN9 on MA-99 board is defective.
YES
The data buses of IC500 and IC503 on MA-99 board are defective.

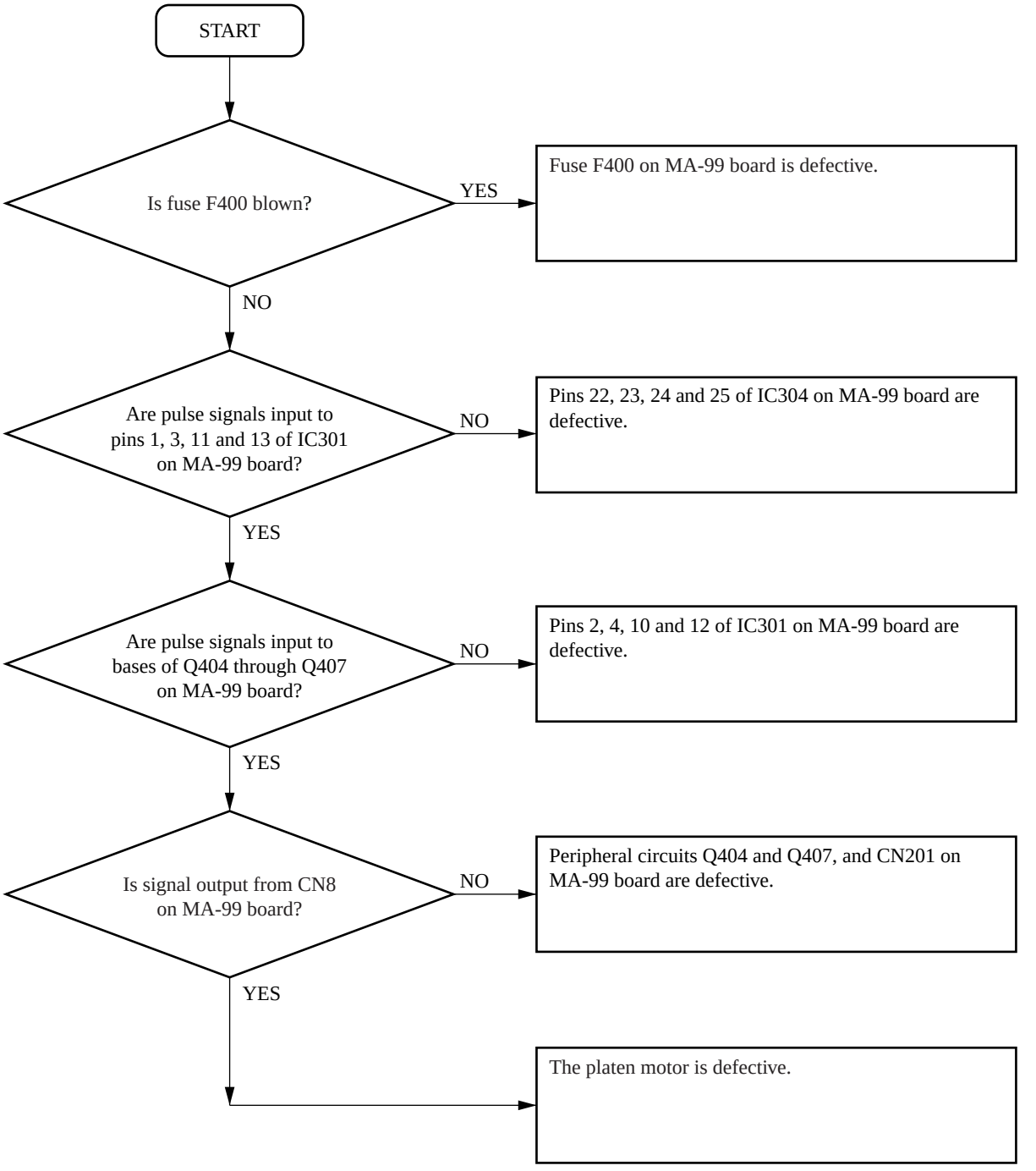
## 5-3. “Paper Sensor” is Out of Order


START
Is signal from sensor available at pin 5 of CN2 on MA-99 board?
NO
PH31 on SE-531 board or D11 on SE-532 board is defective.
YES
Is signal from sensor available at pin 6 of CN3 on MA-99 board?
NO
LED on front panel or PH12 on SE-532 board is defective.
YES
Pins 18 and 19 of IC304 on MA-99 board are defective.

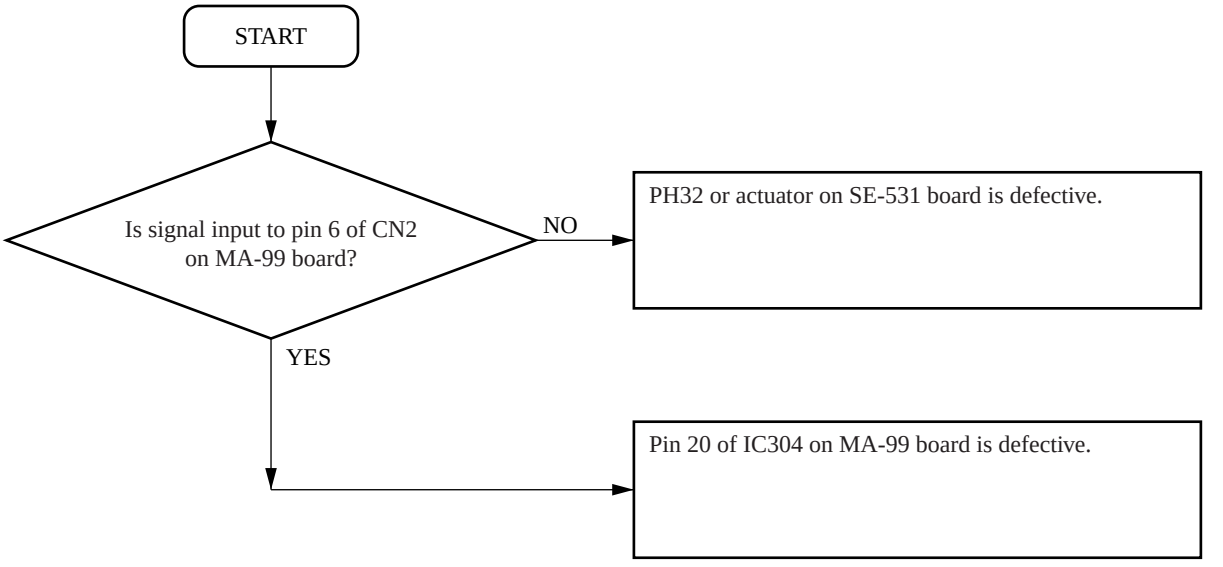
## 5-4. Head Operation (Up & Down) is Out of Order


START
Does head motor operate?
NO
IC400 and Q402 on MA-99 board are defective.
YES
Are signals from sensor available at pins 2 and 3 of CN2 on MA-99 board?
NO
The head position sensors (PH21 and PH22) on SE-531 board are defective.
YES
Pins 16 and 17 of IC304 on MA-99 board are defective.

## 5-5. Paper Feeding is Out of Order


START
Is fuse F400 blown?
YES
Fuse F400 on MA-99 board is defective.
NO
Are pulse signals input to pins 1, 3, 11 and 13 of IC301 on MA-99 board?
NO
Pins 22, 23, 24 and 25 of IC304 on MA-99 board are defective.
YES
Are pulse signals input to bases of Q404 through Q407 on MA-99 board?
NO
Pins 2, 4, 10 and 12 of IC301 on MA-99 board are defective.
YES
Is signal output from CN8 on MA-99 board?
NO
Peripheral circuits Q404 and Q407, and CN201 on MA-99 board are defective.
YES
The platen motor is defective.

## 5-6. Door (Opening and Closing) is Out of Order


START
Is signal input to pin 6 of CN2 on MA-99 board?
NO
PH32 or actuator on SE-531 board is defective.
YES
Pin 20 of IC304 on MA-99 board is defective.

# Section 6
# Service Mode (Self-diagnostic Function)

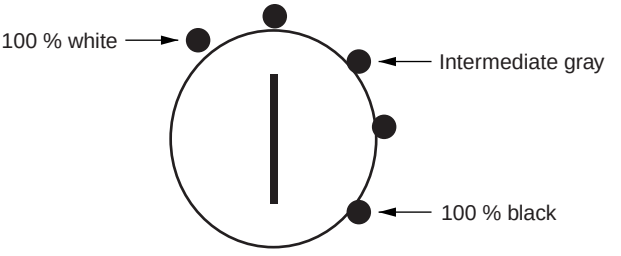
Turn on the power while pressing and holding the PRINT and COPY keys. Release the keys when the buzzer sounds after about two seconds. The service mode is then entered.

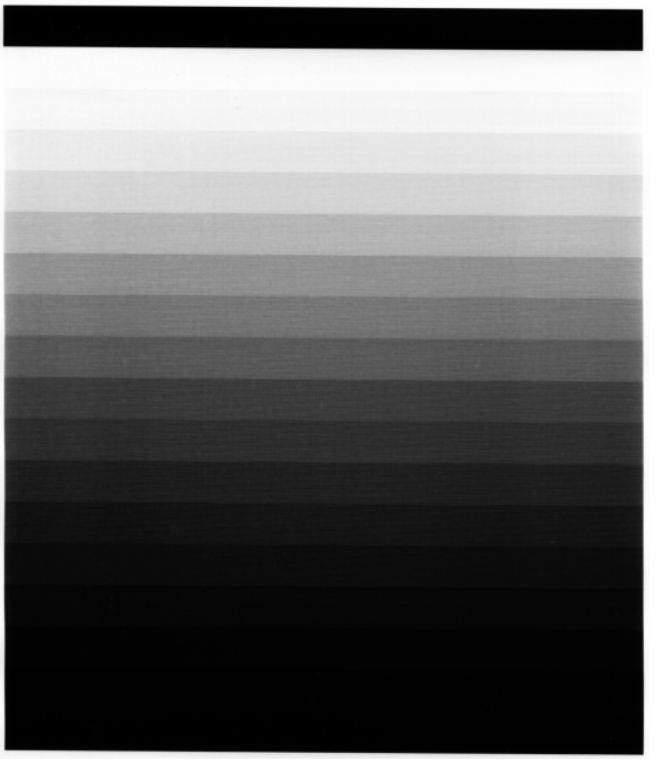
## 6-1 Printing the Test Pattern

Set the POSI/ENGA switch to POSI (no print can be performed when this switch is set to NEGA). "Stair step" and "Gray" are available as a test pattern for printing.

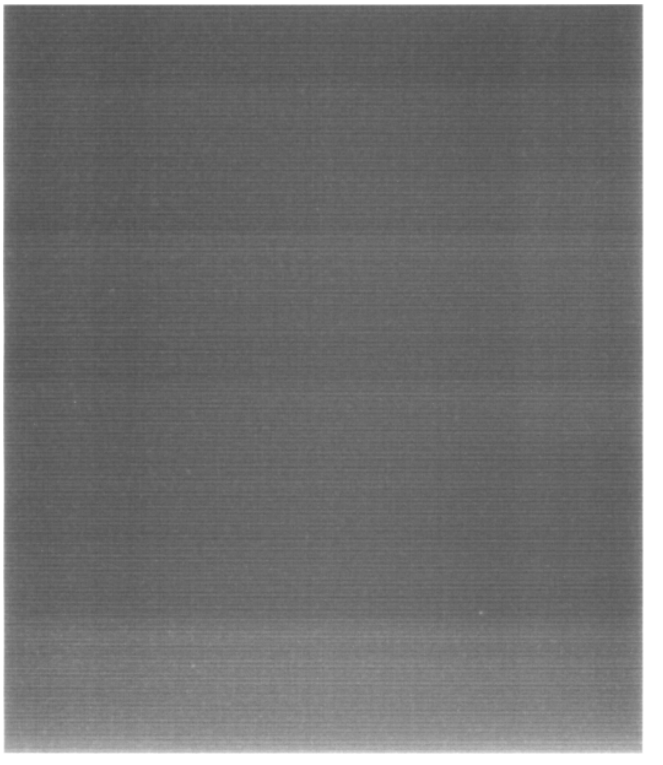
① Press the PRINT key. → Print the stair step pattern.

② Press the COPY key. → Print the gray pattern.
For the gray pattern, the concentration of gray can be selected from 100 % white to 100 % black in five steps using the PRINT SIZE switch.



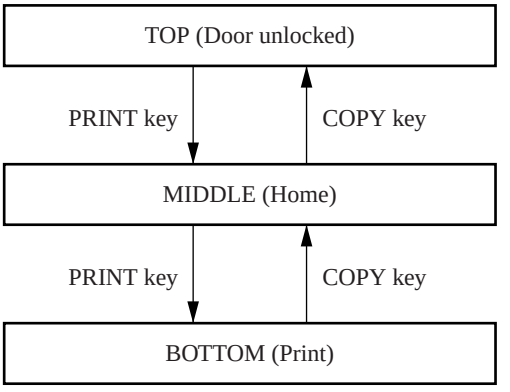
**Stair step**



**Gray**

## 6-2. Up/Down Operation of Head

Set the POSI/NEGA switch to NEGA (a test pattern is printed when this switch is set to POSI). The PRINT key is used as the head DOWN key, and the COPY key as the head UP key. The head can be put in the TOP, MIDDLE (home), or BOTTOM position. It can be moved up and down using the PRINT/ COPY key.



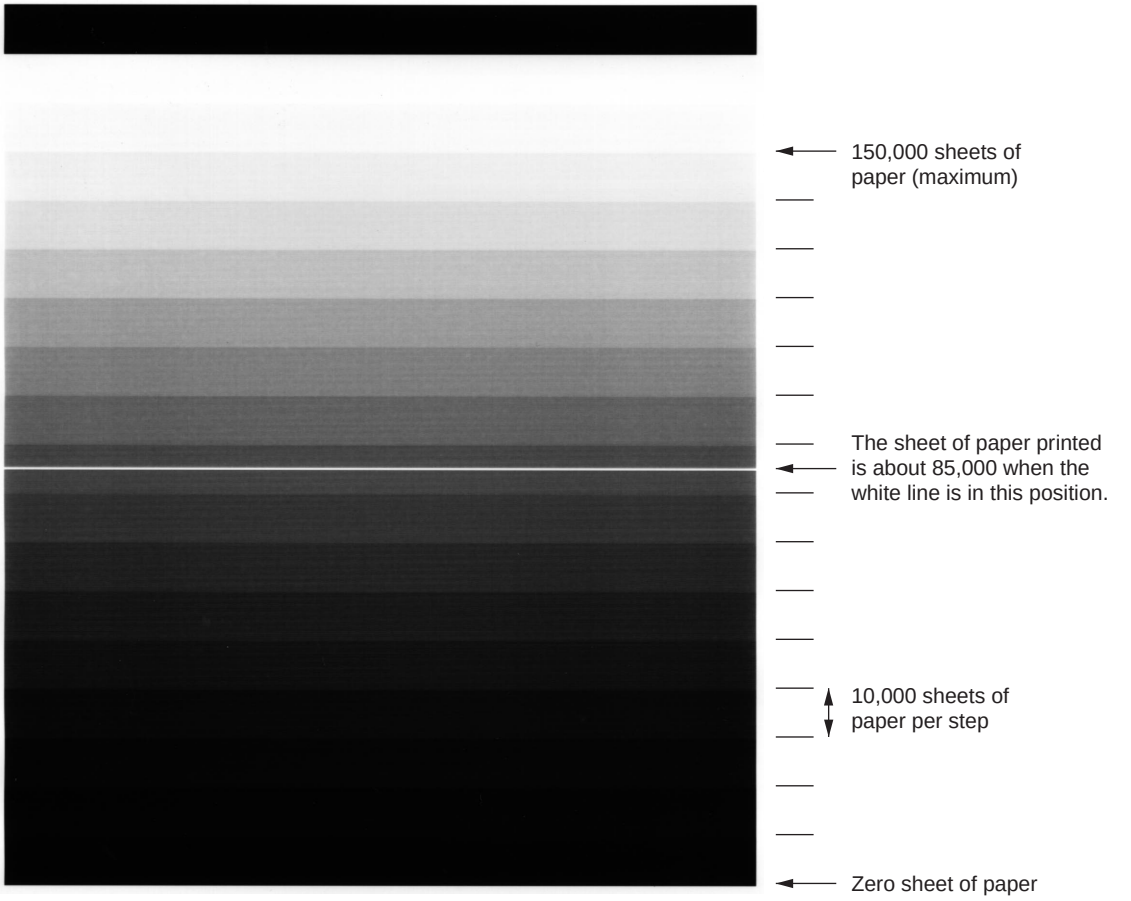

## 6-3. Feed Operation

Press the FEED key. The stepping motor then starts and the platen rotates. The service mode can also be operated with the door opened. Moreover, the forward and reverse rotations can be switched using the POSI/NEGA switch. (The platen rotates in the delivery direction when the switch is set to POSI. The platen rotates in the retracting direction when it is set to NEGA.)

## 6-4. Display and Clearing of Print Sheet History

① Display of print sheet history

Set the PRINT SIZE switch to SML (SMALL mode). Next, press the PRINT key to print the stair step shown in the figure below. One step indicates 10,000 sheets of paper. The white line position indicates the sheet of paper that has been printed. The sheet of print paper can be displayed in the range of 0 to 150,000. The sheet of print paper exceeding 150,000 is displayed as 150,000.


150,000 sheets of paper (maximum)
The sheet of paper printed is about 85,000 when the white line is in this position.
10,000 sheets of paper per step
Zero sheet of paper

② Clearing of print sheet history

In the power off state, turn on the power with the PRINT, COPY, and FEED keys pressed.

# Section 7
# Semiconductor Pin Assignments

The following describes the semiconductor types used in this unit.
For semiconductors marked with page numbers in the index, refer to the corresponding pages in this section. However, in some cases incompatible types are also listed, therefore, when a part is to be replaced, also refer to the Spare Parts section.
In addition, for semiconductors with ID Nos., refer to the separate CD-ROM titled “Semiconductor Pin Assignments” (Sony Part No. 9-968-546-xx) that allows searching for parts by semiconductor type or ID No.
The semiconductors in the manual or on the CD-ROM are listed by equivalent types. Thus the external view or the index mark indication may differ from the actual type.
Pin assignments and block diagrams are based on the IC manufacturer’s data book.

本機に使用されている半導体型名の一覧を下記に示します。
索引中，ページが記載されている半導体は，本章の該当ページを参照してください。ただし，互換性のない型名を併記している場合がありますので，部品を交換するときは，Spare Partsの章を参照してください。
また，ID番号が記載されている半導体は，別途発行の “Semiconductor Pin Assignments” CD−ROM版 (ソニー部品番号：9−968−546−xx)を参照してください。
半導体型名またはID番号から検索ができます。
マニュアルまたはCD−ROMに掲載されている半導体は，それぞれの機能を等価的に表わしたものです。
外観やインデックスマークの表示方法が実物と異なる場合があります。
ピン配置およびブロック図はICメーカーのデータブックに従いました。


**DIODE** — **Page or ID No.**

10E-2 ..... DA001-01
10E-2FD ..... DA001-01
1S2836 ..... DC001-02
1S2836-T1 ..... DC001-02
1SS302 ..... DC001-01
1SS302-TE85L ..... DC001-01

**LED**

GL-520 ..... LR008-01

**TRANSISTOR** — **Page or ID No.**

2SA1162G ..... TC001-01
2SA812-T1-M5M6 ..... TC001-01
2SC1623-L5L6 ..... TC001-02
2SC1623-T1-L5L6 ..... TC001-02
2SD992-Z ..... TR031-05
2SD992-Z-E2 ..... TR031-05
2SD999-CLCK ..... TC002-02
2SD999-T1-CLCK ..... TC002-02

DTC124EKA-T146 ..... TC001-03

PT493F ..... TR037-01
PT501A ..... TR006-02

XN4402-(TX) ..... TC006-05
XN4501 ..... TC005-01
XN4501-TW ..... TC005-01
XN4601 ..... TC006-06
XN4601-TW ..... TC006-06

**OTHER**

RPI-352 ..... MR010-07

**IC**

BA7655AF-E2 ..... BA7655AF

CXD1171M ..... CXD1171M
CXD1171M-TH ..... CXD1171M
CXD8932Q ..... CXD8932Q

DS1000Z-100 ..... DS1000M-100
DS1000Z-100(TE2) ..... DS1000M-100

HA11465A ..... HA11465A

LM358PS ..... LM358N
LM358PSR ..... LM358N

M24C02-MN6T ..... 7-2
M54543L ..... M54543L
MB40C568HPF-ER ..... MB40C568HPF-ER
MB81F64842D-102FN ..... 7-2
MC14053BF ..... CD4053BE
MC14053BFEL ..... CD4053BE

NJM2234M ..... NJM2234M
NJM2234M(TE2) ..... NJM2234M
NJM7812FA ..... NJM78M05FA

PQ3RF33 ..... PQ05RF1
PST600DMT-T1 ..... PST600D

RPI-5100 ..... RPI5100

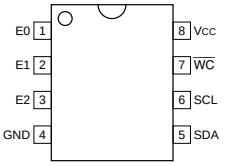
SN74HC14ANS ..... TC74HC14P
SN74HC14ANSR ..... TC74HC14P
SN74HC251ANSR ..... TC74HC251P

TC74VHC174FT(EL) ..... TC74HC174P
TC7S00FU(TE85R) ..... TC7S00F
TC7S14FU(TE85R) ..... TC7S14FU

# IC

M24C02-MN6T
M24C02-MN6T (THOMSON)

2K-BIT SERIAL BUS EEPROM
—TOP VIEW—

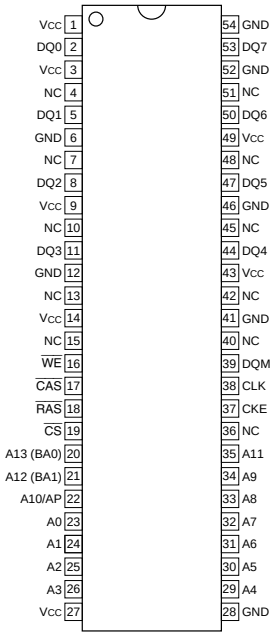



**INPUTS**
E0 - E2 : CHIP ENABLE
SCL : SERIAL CLOCK
WC : WRITE CONTROL

**INPUT/OUTPUT**
SDA : SERIAL DATA ADDRESS

MB81F64842D-102FN
MB81F64842D-102FN (FUJITSU)

64M (4 × 2097152 × 8) -BIT SDRAM
—TOP VIEW—




**INPUTS**
A0 - A11 : ADDRESS
A12 (BA1), A13 (BA0) : BANK SELECT (BANK ADDRESS)
AP : AUTO PRECHARGE ENABLE
CAS : COLUMN ADDRESS STROBE
CKE : CLOCK ENABLE
CLK : CLOCK
CS : CHIP SELECT
DQM : DQ MASK
RAS : ROW ADDRESS STROBE
WE : WRITE ENABLE

**INPUTS/OUTPUTS**
DQ0 - DQ7 : DATA

**OTHER**
NC : NO CONNECTION

| PIN NO. | I/O | SIGNAL | PIN NO. | I/O | SIGNAL | PIN NO. | I/O | SIGNAL |
|---|---|---|---|---|---|---|---|---|
| 1 | — | VCC | 19 | I | CS | 37 | I | CKE |
| 2 | I/O | DQ0 | 20 | I | A13 (BA0) | 38 | I | CLK |
| 3 | — | VCC | 21 | I | A12 (BA1) | 39 | I | DQM |
| 4 | — | NC | 22 | I | A10/AP | 40 | — | NC |
| 5 | I/O | DQ1 | 23 | I | A0 | 41 | — | GND |
| 6 | — | GND | 24 | I | A1 | 42 | — | NC |
| 7 | — | NC | 25 | I | A2 | 43 | — | VCC |
| 8 | I/O | DQ2 | 26 | I | A3 | 44 | I/O | DQ4 |
| 9 | — | VCC | 27 | — | VCC | 45 | — | NC |
| 10 | — | NC | 28 | — | GND | 46 | — | GND |
| 11 | I/O | DQ3 | 29 | I | A4 | 47 | I/O | DQ5 |
| 12 | — | GND | 30 | I | A5 | 48 | — | NC |
| 13 | — | NC | 31 | I | A6 | 49 | — | VCC |
| 14 | — | VCC | 32 | I | A7 | 50 | I/O | DQ6 |
| 15 | — | NC | 33 | I | A8 | 51 | — | NC |
| 16 | I | WE | 34 | I | A9 | 52 | — | GND |
| 17 | I | CAS | 35 | I | A11 | 53 | I/O | DQ7 |
| 18 | I | RAS | 36 | — | NC | 54 | — | GND |

# Section 8
# Spare Parts

## 8-1. Notes on Repair Parts

### 1. Safety Related Components Warning

**WARNING**

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

### 2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

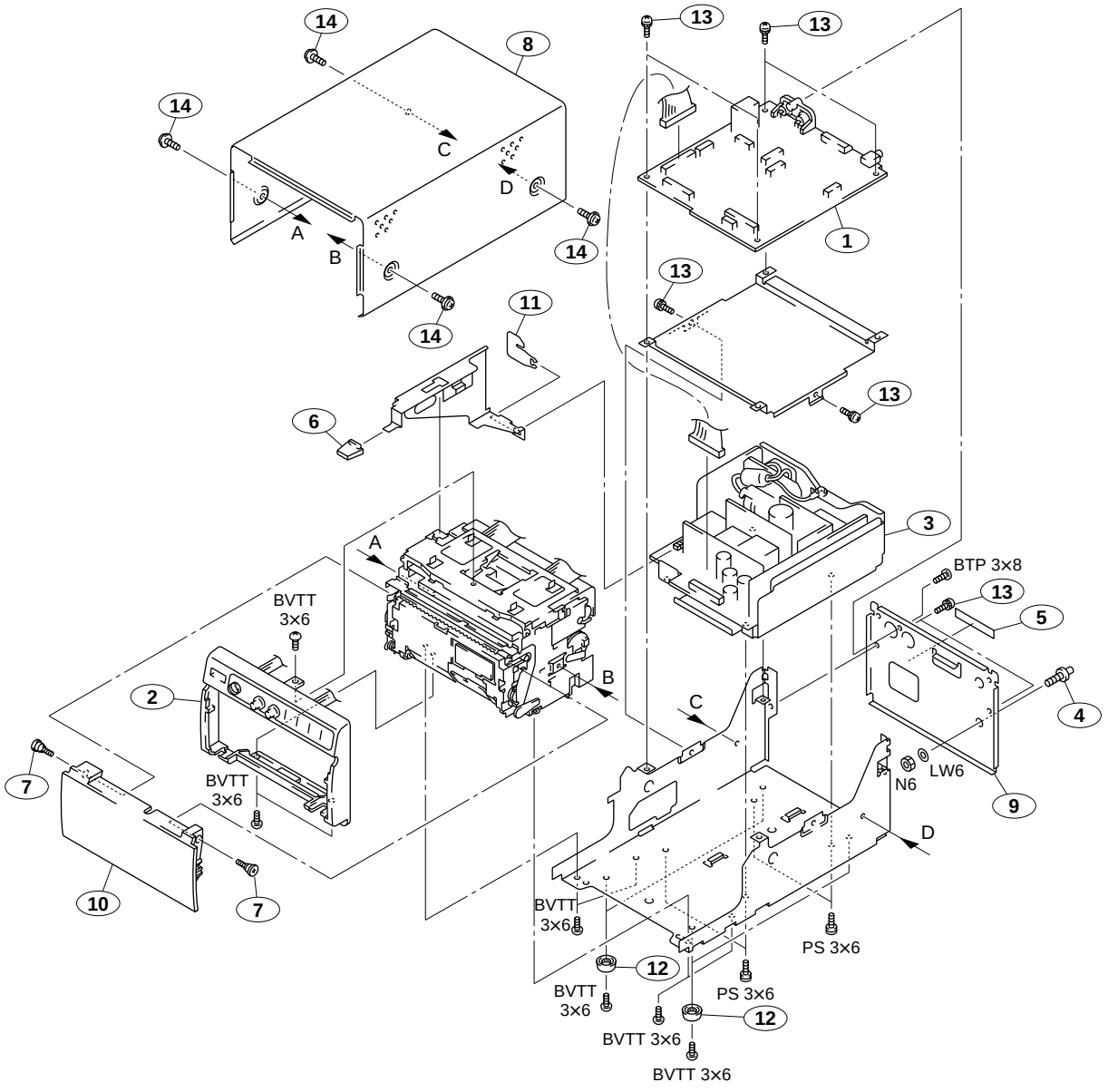
### 3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

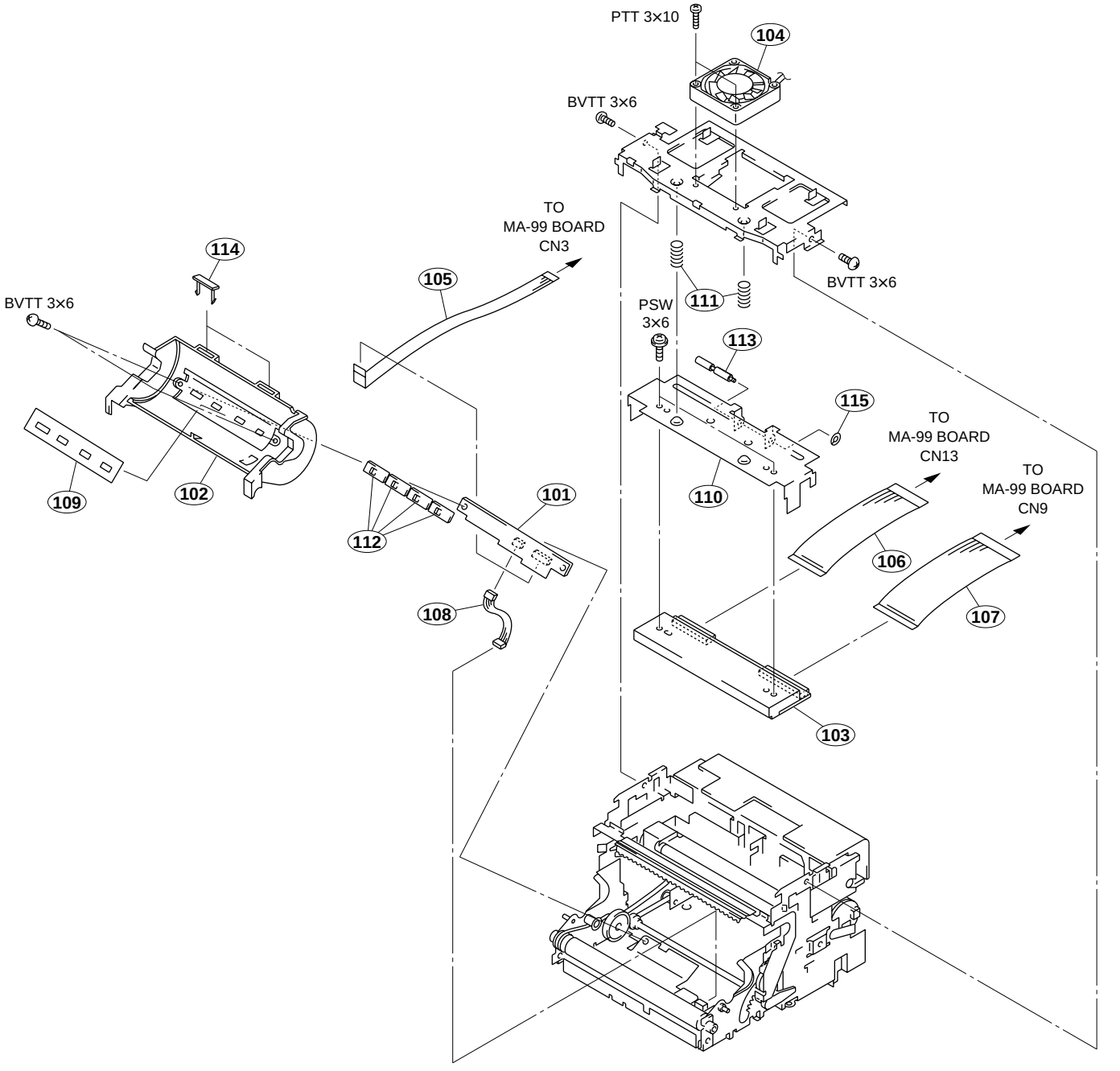
### 4. Harness

Harnesses with no part number are not registered as spare parts.
In need of repair, get components shown in the list and repair using them.

## 8-2. Exploded Views

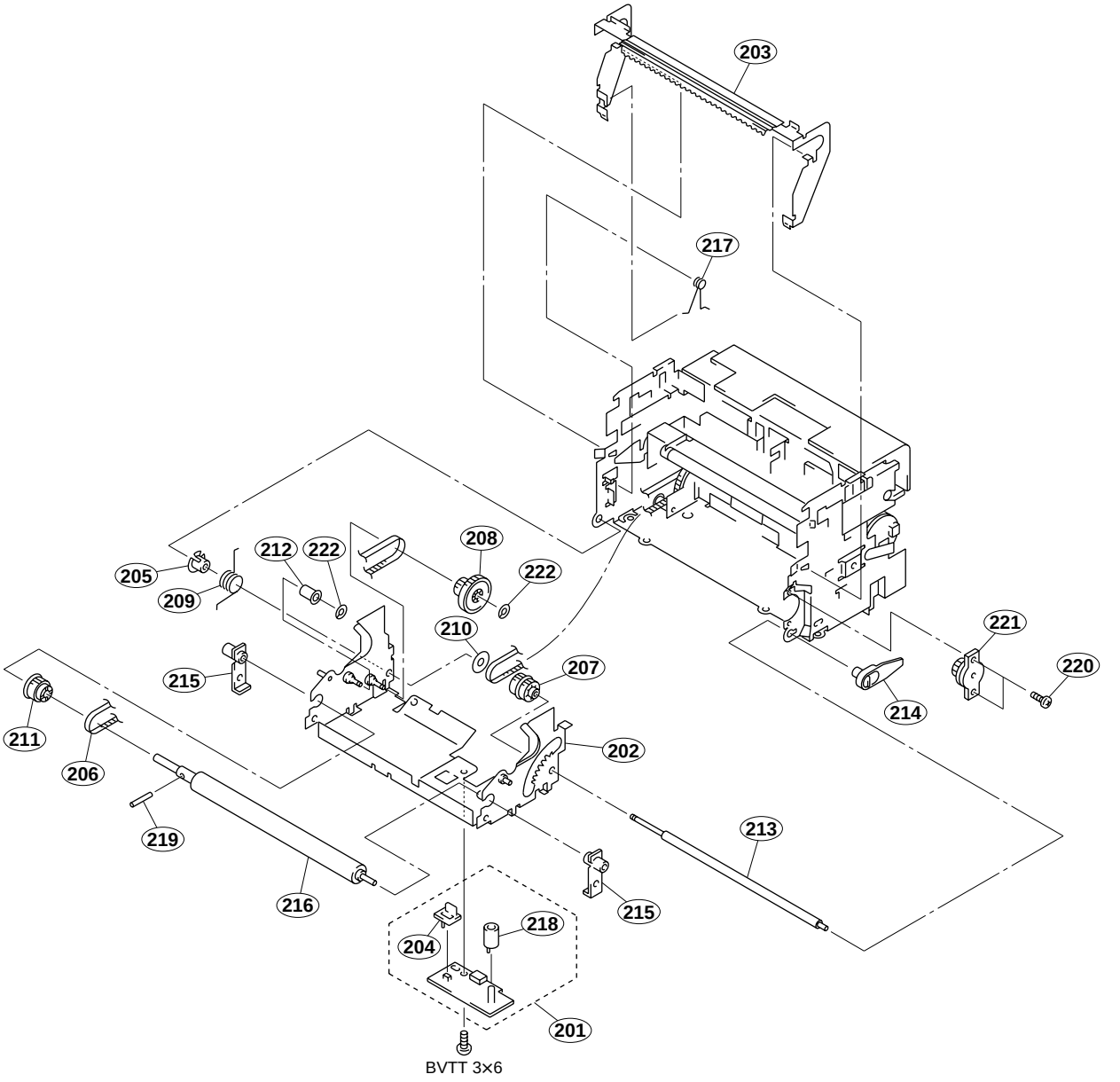



| No. | Part No. | SP | Description |
|---|---|---|---|
| 1 | A-8323-913-A | o | MOUNTED CIRCUIT BOARD, MA-99 |
| 2 | 1-418-820-11 | s | PANEL UNIT, FRONT |
| 3 | ⚠ 1-468-456-12 | s | REGULATOR, SWITCHING |
| 4 | 3-175-740-01 | o | TERMINAL |
| | | | [for UP-895MD(UC,SY), UP-895CE(CE)] |
| 5 | 3-179-847-01 | o | LABEL(NORTHERN EUROPE),CAUTION |
| | | | [for UP-895CE(CE), UP-895MD(SY)] |
| 6 | 3-187-313-21 | o | BUTTON, POWER |
| 7 | 3-623-875-02 | s | SCREW,STEP |
| 8 | 3-623-889-01 | o | TOP COVER |
| 9 | 3-623-894-02 | o | PANEL,REAR |
| | | | [for UP-895CE(CE), UP-895MD(UC,SY)] |
| | 3-623-894-12 | o | PANEL,REAR |
| | | | [for UP-895(J,UC), UP-895MD(J)] |
| 10 | 3-623-912-03 | s | PANEL,DOOR [for UP-895(J,UC)] |
| | 3-623-912-13 | s | PANEL,DOOR [for UP-895MD(J,UC,SY)] |
| | 3-623-912-23 | s | PANEL,DOOR [for UP-895CE(CE)] |
| 11 | 3-623-919-01 | o | STOPPER,ROD |
| 12 | 3-734-866-01 | s | FOOT |
| 13 | 4-034-937-01 | s | SCREW (M3X8), TAPPING (ST) |
| 14 | 4-886-821-11 | s | SCREW,M3X6 CASE (SILVER) |

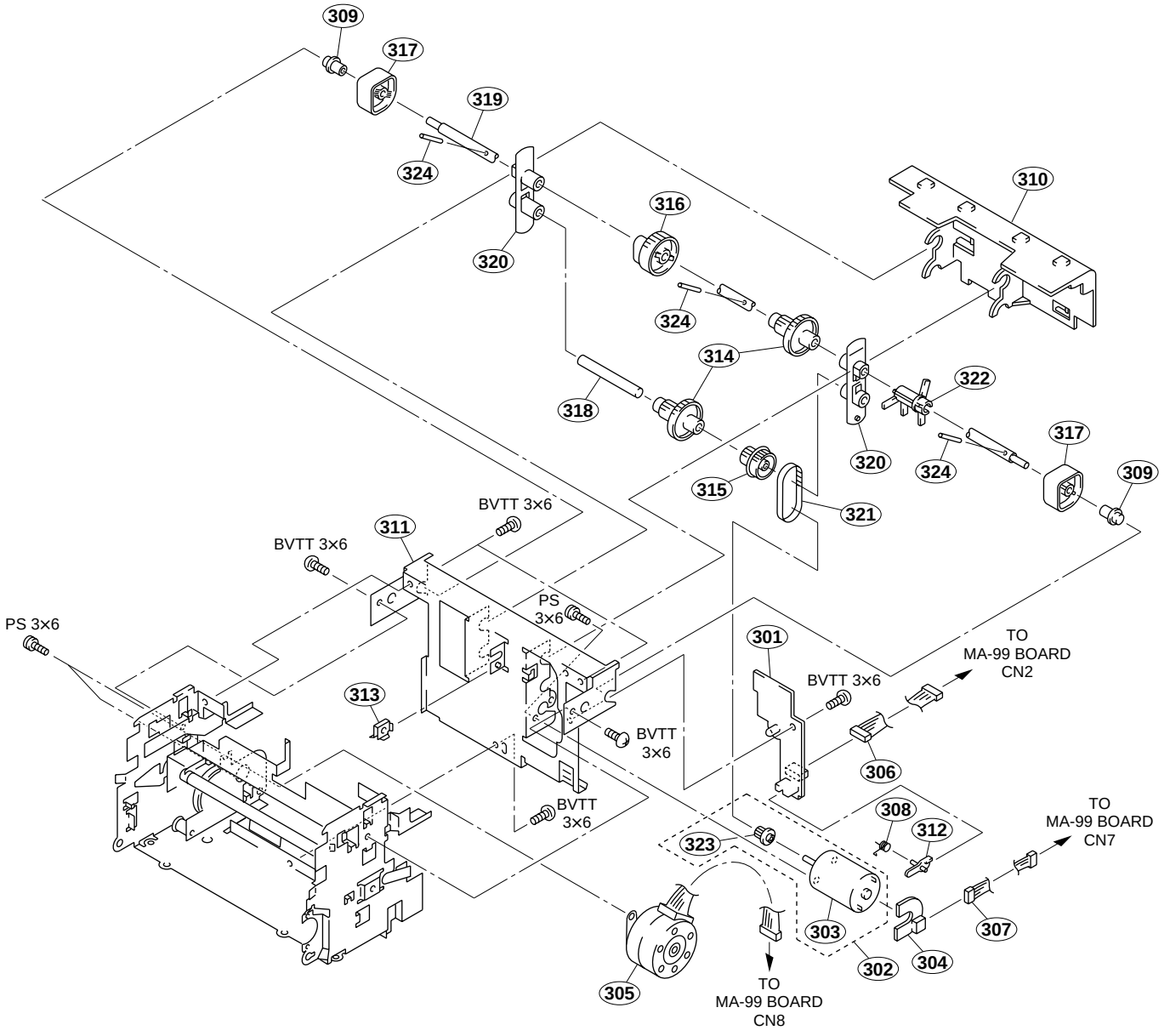



| No. | Part No. | SP | Description |
|---|---|---|---|
| 101 | A-8323-915-A | o | MOUNTED CIRCUIT BOARD, KY-454 |
| 102 | X-3605-752-1 | o | ASSY,PAPER TRAY |
| 103 | 1-251-855-11 | s | HEAD, THERMAL (LVE6413SS) |
| 104 | 1-763-007-21 | o | FAN, DC (OPTION) |
| 105 | 1-792-200-11 | o | WIRE, FLAT TYPE (8 CORE) |
| 106 | 1-792-201-11 | o | WIRE, FLAT TYPE (26 CORE) |
| 107 | 1-792-202-11 | o | WIRE, FLAT TYPE (30 CORE) |
| 108 | 1-960-221-11 | o | HARNESS, SUB (3P) |
| 109 | 3-623-867-02 | o | SEAT,SWITCH |
| 110 | 3-623-890-01 | s | HEAT SINK |
| 111 | 3-623-899-01 | s | SPRING,COMPRESSION |
| 112 | 3-623-908-02 | s | COVOR,SWITCH |
| 113 | 3-623-924-02 | o | SHAFT,HEAD FULCRUM |
| 114 | 3-624-816-01 | s | STOPPER,ROLL |
| 115 | 4-926-219-02 | s | RING (DIA.2.3), RETAINING |

# Inner Chassis Block

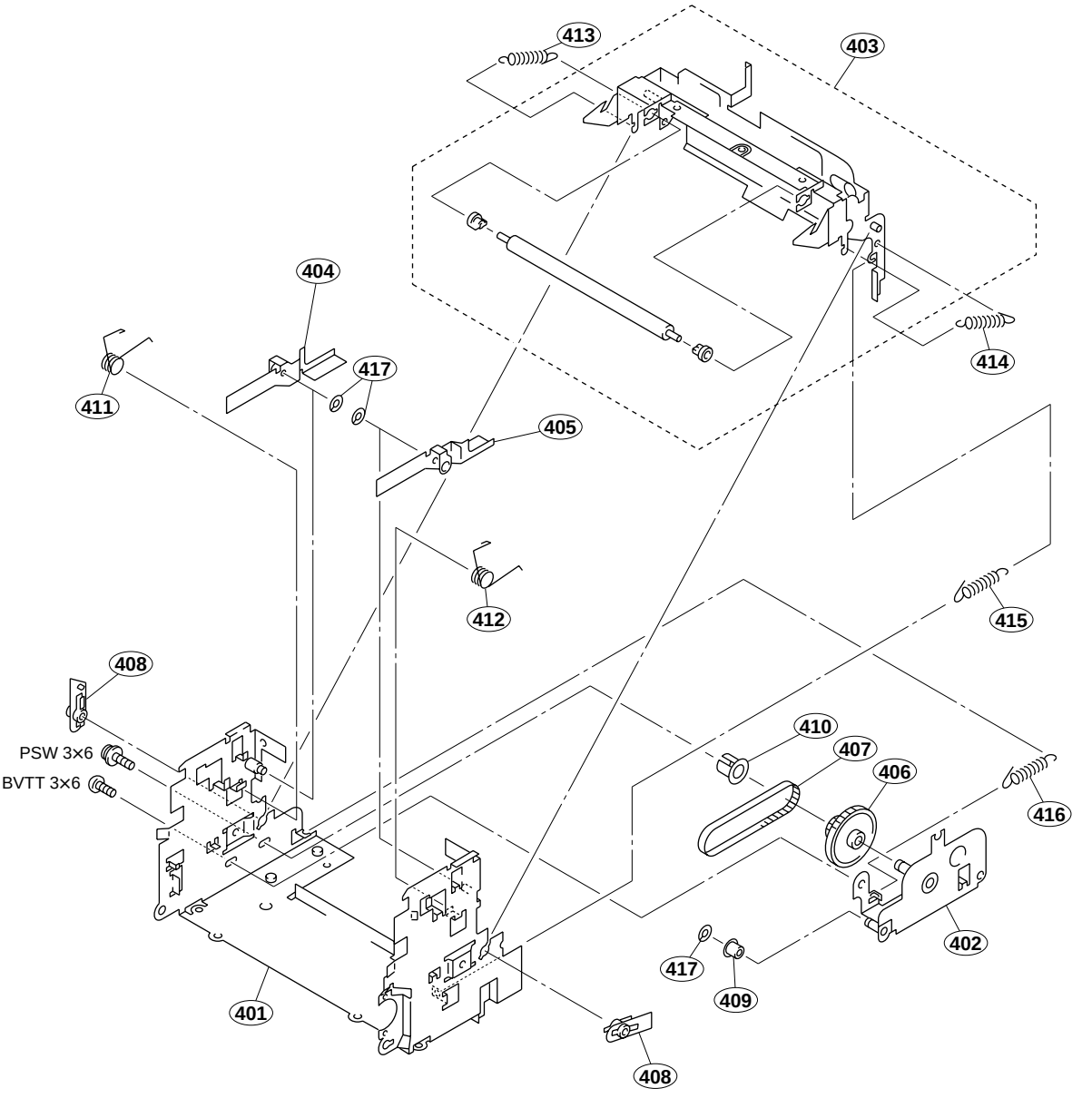



| No. | Part No. | SP | Description |
|---|---|---|---|
| 201 | A-8323-917-A | o | MOUNTED CIRCUIT BOARD, SE-532 |
| 202 | X-3605-674-2 | s | ASSY,INNER CHASSIS |
| 203 | X-3605-675-1 | s | ASSY,CUTTER |
| 204 | 3-187-312-02 | s | HOLDER (P), LED |
| 205 | 3-623-873-01 | s | SPACER,INNER SHAFT(POM) |
| 206 | 3-623-879-01 | s | BELT,110TN10-4.0K(PUR) |
| 207 | 3-623-880-01 | s | IDLE GEAR PULLY |
| 208 | 3-623-881-01 | s | GEAR PULLY 2 |
| 209 | 3-623-891-01 | s | SPRING,DOOR OPEN |
| 210 | 3-623-892-01 | s | RING,RETAINING |
| 211 | 3-623-893-02 | s | PULLY,PLATEN |
| 212 | 3-623-900-01 | s | ROLLER,TENTION |
| 213 | 3-623-902-01 | o | SHAFT,INNER |
| 214 | 3-623-903-01 | s | BEARING,INNER SHAFT(POM) |
| 215 | 3-623-904-01 | s | BEARING,PLATEN(PLASTIC) |
| 216 | 3-623-909-02 | s | PLATEN |
| 217 | 3-626-685-01 | s | SPRING,CUTTER |
| 218 | 3-689-205-02 | s | HOLDER (A), LED |
| 219 | 3-703-357-07 | s | PIN PARALLEL (1.6X10) (STEEL) |
| 220 | 3-719-381-01 | s | SCREW +P M2X4 (ZNBK)(LOCK ) |
| 221 | 3-973-975-31 | s | DAMPER, OIL |
| 222 | 4-926-219-02 | s | RING (DIA.2.3), RETAINING |




| No. | Part No. | SP | Description |
|---|---|---|---|
| 301 | A-8323-916-A | o | MOUNTED CIRCUIT BOARD, SE-531 |
| 302 | X-3605-682-1 | s | MOTOR ASSY |
| 303 | 1-541-309-11 | s | MOTOR,(RF-370C)(DC)(2.59W) |
| 304 | 1-676-696-11 | o | PRINTED WIRING BOARD, SU-52 |
| 305 | 1-698-928-22 | s | MOTOR, STEPPING |
| 306 | 1-960-220-11 | o | HARNESS, SUB (6P) |
| 307 | 1-960-222-11 | o | HARNESS, SUB (2P) |
| 308 | 3-613-740-01 | s | SPRING,HELICAL TORSION A |
| 309 | 3-613-781-01 | s | COVER,CENTER SHAFT |
| 310 | 3-623-868-01 | o | COVER,GEAR |
| 311 | 3-623-886-02 | o | CHASSIS,REAR |
| 312 | 3-623-910-01 | s | LEVER,DOOR SENSOR |
| 313 | 3-623-922-01 | o | COVER,FULCRUM PLATE |
| 314 | 3-623-925-02 | s | GEAR,HEAD DRIVE |
| 315 | 3-623-926-02 | s | PULLY,HEAD DRIVE |
| 316 | 3-623-927-01 | s | CAM,PRESS ROLLER |
| 317 | 3-623-928-02 | s | CAM,HEAD |
| 318 | 3-623-929-01 | o | SHAFT,DRIVE GEAR |
| 319 | 3-623-930-01 | o | SHAFT,HEAD CAM |
| 320 | 3-623-931-02 | s | BEARING,REAR(POM) |
| 321 | 3-623-932-01 | s | BELT,70TN10-3.5(PUR) |
| 322 | 3-623-933-01 | s | FIN,HEAD SENSOR |
| 323 | 3-683-773-04 | s | GEAR,PAPER MOTOR |
| 324 | 3-703-357-07 | s | PIN PARALLEL (1.6X10) (STEEL) |

# Arm Assy and Gear Bracket Block




| No. | Part No. | SP | Description |
|---|---|---|---|
| 401 | X-3605-671-2 | o | ASSY,MECHA CHASSIS |
| 402 | X-3605-672-2 | o | ASSY,GEAR BRACKET |
| 403 | X-3605-673-1 | s | ARM ASSY |
| 404 | 3-623-869-01 | o | LEVER(L),HEAD UP |
| 405 | 3-623-870-01 | o | LEVER(R),HEAD UP |
| 406 | 3-623-877-01 | s | GEAR PULLY 1 |
| 407 | 3-623-878-01 | s | BELT,140TN10-3.0K(PUR) |
| 408 | 3-623-885-01 | s | BEARING,ARM(POM) |
| 409 | 3-623-900-01 | s | ROLLER,TENTION |
| 410 | 3-623-913-01 | s | ROLLER,GUIDE |
| 411 | 3-623-920-01 | s | SPRING,HEAD PUSH L |
| 412 | 3-623-921-01 | s | SPRING,HEAD PUSH R |
| 413 | 3-624-785-01 | s | SPRING,EXTENSION |
| 414 | 3-624-786-01 | s | SPRING,EXTENSION |
| 415 | 3-624-917-01 | s | SPRING,EXTENSION |
| 416 | 3-624-974-01 | s | SPRING,EXTENSION |
| 417 | 4-926-219-02 | s | RING (DIA.2.3), RETAINING |

## 8-3. Electrical Parts List

KY-454 BOARD

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| 1pc | A-8323-915-A | o | MOUNTED CIRCUIT BOARD, KY-454 |
| C1 | 1-164-004-11 | s | CAPACITOR,CERAMIC 0.1MF/25V |
| C2 | 1-164-004-11 | s | CAPACITOR,CERAMIC 0.1MF/25V |
| C3 | 1-164-004-11 | s | CAPACITOR,CERAMIC 0.1MF/25V |
| C4 | 1-164-004-11 | s | CAPACITOR,CERAMIC 0.1MF/25V |
| C5 | 1-164-004-11 | s | CAPACITOR,CERAMIC 0.1MF/25V |
| CN1 | 1-568-164-11 | s | CONNECTOR,FPC 8P |
| CN2 | 1-580-056-21 | o | PIN,CONNECTOR 3P |
| R1 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| R2 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| R3 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| R4 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| R5 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| R6 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| R7 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| R8 | 1-216-061-00 | s | RESISTOR CHIP 3.3K 1/10W(2012) |
| S1 | 1-572-487-21 | s | SWITCH, SLIDE (1-1-4) |
| S2 | 1-571-506-41 | s | SWITCH,SLIDE (1-1-3) |
| S3 | 1-571-506-41 | s | SWITCH,SLIDE (1-1-3) |
| S4 | 1-571-275-31 | s | SWITCH,SLIDE (1-1-2) |

MA-99 BOARD

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| 1pc | A-8323-913-A | o | MOUNTED CIRCUIT BOARD, MA-99 |
| BZ400 | 1-529-080-11 | s | BUZZER,PIEZOELECTRIC |
| C2 | 1-126-925-11 | s | CAPACITOR,ELECT 470MF/10V |
| C3 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C4 | 1-162-921-11 | s | CAPACITOR,CERAMIC 33PF/50V CH |
| C5 | 1-135-145-11 | s | CAPACITOR TANTALUM 0.47MF/35V |
| C6 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C7 | 1-126-962-11 | s | CAP,ELECT 3.3MF/50V |
| C8 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C9 | 1-163-220-11 | s | CAPACITOR, CHIP CERAMIC 3.0PF |
| C10 | 1-162-907-11 | s | CAPACITOR,CERAMIC 2PF/50V(CK) |
| C11 | 1-162-910-11 | s | CAPACITOR,CERAMIC 5PF/50V 1608 |
| C12 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C13 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C14 | 1-162-910-11 | s | CAPACITOR,CERAMIC 5PF/50V 1608 |
| C15 | 1-162-910-11 | s | CAPACITOR,CERAMIC 5PF/50V 1608 |
| C16 | 1-162-923-11 | s | CAPACITOR,CERAMIC 47PF/50V CH |
| C23 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C24 | 1-162-966-11 | s | CAPACITOR,CERAMIC 2200PF/50V B |
| C25 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C26 | 1-162-921-11 | s | CAPACITOR,CERAMIC 33PF/50V CH |
| C27 | 1-126-962-11 | s | CAP,ELECT 3.3MF/50V |
| C28 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C29 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C30 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C31 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C32 | 1-162-966-11 | s | CAPACITOR,CERAMIC 2200PF/50V B |
| C33 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C34 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C35 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C36 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C44 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C46 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C47 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C56 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C57 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C60 | 1-126-960-11 | s | CAPACITOR,ELECT 1MF/50V |
| C62 | 1-126-925-11 | s | CAPACITOR,ELECT 470MF/10V |
| C100 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C101 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C102 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C103 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C104 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C107 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C108 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C109 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C200 | 1-126-925-11 | s | CAPACITOR,ELECT 470MF/10V |
| C201 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C202 | 1-126-941-11 | s | CAPACITOR,ELECT 470MF/25V |
| C203 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C204 | 1-126-925-11 | s | CAPACITOR,ELECT 470MF/10V |
| C205 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C206 | 1-126-941-11 | s | CAPACITOR,ELECT 470MF/25V |
| C207 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C208 | 1-126-925-11 | s | CAPACITOR,ELECT 470MF/10V |
| C209 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C210 | 1-104-665-11 | s | CAPACITOR, ELECT 100MF/25V |

(MA-99 BOARD)

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| C211 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C220 | 1-127-675-11 | s | CAPACITOR,CHIP CERAMIC 22MF B |
| C221 | 1-126-964-11 | s | CAPACITOR, ELECT 10MF/50V |
| C222 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C223 | 1-162-966-11 | s | CAPACITOR,CERAMIC 2200PF/50V B |
| C224 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C225 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C226 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C235 | 1-126-962-11 | s | CAP,ELECT 3.3MF/50V |
| C300 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C301 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C302 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C303 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C304 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C305 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C306 | 1-162-916-11 | s | CAPACITOR,CERAMIC 12PF/50V CH |
| C307 | 1-162-916-11 | s | CAPACITOR,CERAMIC 12PF/50V CH |
| C310 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C311 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C312 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C313 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C314 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C315 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C316 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C317 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C318 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C319 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C320 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C321 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C322 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C323 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C324 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C325 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C326 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C327 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C328 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C329 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C330 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C331 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C332 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C333 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C334 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C335 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C336 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C337 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C338 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C339 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C340 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C341 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C350 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C351 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C352 | 1-164-227-11 | s | CAPACITOR,CERAMIC 0.022MF/25V |
| C360 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C361 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C362 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C401 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C403 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C404 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C405 | 1-164-227-11 | s | CAPACITOR,CERAMIC 0.022MF/25V |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| C406 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C407 | 1-104-664-11 | s | CAPACITOR, ELECT 47MF/25V |
| C409 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C431 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C432 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C433 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C500 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C501 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C502 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C503 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C504 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C505 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C506 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C507 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C508 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C509 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C510 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C511 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C512 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C513 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C514 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C515 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C516 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C517 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C518 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C519 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C520 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C521 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C522 | 1-162-921-11 | s | CAPACITOR,CERAMIC 33PF/50V CH |
| C523 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C524 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C525 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C526 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C527 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C528 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C529 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C530 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C531 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C532 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C533 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C535 | 1-162-919-11 | s | CAPACITOR,CERAMIC 22PF/50V CH |
| C536 | 1-162-919-11 | s | CAPACITOR,CERAMIC 22PF/50V CH |
| C537 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C539 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C540 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C541 | 1-125-817-11 | s | CAPACITOR, CERAMIC 10MF/6.3V |
| C542 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C543 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C544 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| C545 | 1-162-970-11 | s | CAPACITOR CERAMIC 0.01MF/25V B |
| C548 | 1-164-156-11 | s | CAPACITOR,CERAMIC 0.1MF/25V F |
| CN1 | 1-695-408-11 | s | SOCKET, CONNECTOR FPC (11P) |
| CN2 | 1-506-472-11 | s | PIN,CONNECTOR 7P |
| CN3 | 1-751-022-11 | s | SOCKET, CONNECTOR 8P (FPC) |
| CN5 | 1-564-005-11 | o | PIN, CONNECTOR 6P |
| CN6 | 1-770-469-21 | o | PIN, CONNECTOR (PC BOARD) 2P |
| CN7 | 1-564-002-11 | s | PIN, CONNECTOR 3P |
| CN8 | 1-564-005-11 | o | PIN, CONNECTOR 6P |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| CN9 | 1-565-473-11 | o | HOUSING,CONNECTOR 30P |
| CN10 | 1-691-431-11 | s | CONNECTOR ASSY, BNC |
| CN11 | 1-564-004-11 | o | PIN, CONNECTOR 5P |
| CN13 | 1-764-781-11 | o | SOCKET, CONNECTOR 26P |
| CN14 | 1-569-536-11 | s | SOCKET, CONNECTOR 7P |
| D2 | 8-719-820-41 | s | DIODE 1SS302 |
| D5 | 8-719-820-41 | s | DIODE 1SS302 |
| D300 | 8-719-820-41 | s | DIODE 1SS302 |
| D301 | 8-719-820-41 | s | DIODE 1SS302 |
| D302 | 8-719-820-41 | s | DIODE 1SS302 |
| D303 | 8-719-820-41 | s | DIODE 1SS302 |
| D304 | 8-719-820-41 | s | DIODE 1SS302 |
| D305 | 8-719-820-41 | s | DIODE 1SS302 |
| D306 | 8-719-820-41 | s | DIODE 1SS302 |
| D307 | 8-719-820-41 | s | DIODE 1SS302 |
| D308 | 8-719-820-41 | s | DIODE 1SS302 |
| D309 | 8-719-820-41 | s | DIODE 1SS302 |
| D310 | 8-719-820-41 | s | DIODE 1SS302 |
| D311 | 8-719-820-41 | s | DIODE 1SS302 |
| D312 | 8-719-820-41 | s | DIODE 1SS302 |
| D313 | 8-719-820-41 | s | DIODE 1SS302 |
| D314 | 8-719-820-41 | s | DIODE 1SS302 |
| D315 | 8-719-820-41 | s | DIODE 1SS302 |
| D316 | 8-719-820-41 | s | DIODE 1SS302 |
| D317 | 8-719-820-41 | s | DIODE 1SS302 |
| D318 | 8-719-820-41 | s | DIODE 1SS302 |
| D319 | 8-719-820-41 | s | DIODE 1SS302 |
| D320 | 8-719-820-41 | s | DIODE 1SS302 |
| D321 | 8-719-820-41 | s | DIODE 1SS302 |
| D322 | 8-719-820-41 | s | DIODE 1SS302 |
| D323 | 8-719-820-41 | s | DIODE 1SS302 |
| D324 | 8-719-820-41 | s | DIODE 1SS302 |
| D325 | 8-719-820-41 | s | DIODE 1SS302 |
| D400 | 8-719-200-02 | s | DIODE 10E2 (RECTI) |
| D401 | 8-719-104-34 | s | DIODE 1S2836 |
| D402 | 8-719-104-34 | s | DIODE 1S2836 |
| D403 | 8-719-104-34 | s | DIODE 1S2836 |
| D404 | 8-719-104-34 | s | DIODE 1S2836 |
| D405 | 8-719-820-41 | s | DIODE 1SS302 |
| D406 | 8-719-104-34 | s | DIODE 1S2836 |
| D407 | 8-719-104-34 | s | DIODE 1S2836 |
| D408 | 8-719-820-41 | s | DIODE 1SS302 |
| D600 | 8-719-820-41 | s | DIODE 1SS302 |
| F400 | ⚠ 1-532-777-51 | s | FUSE MICRO 1.25A/125V |
| FB200 | 1-410-397-21 | s | FERRITE BEAD INDUCTOR |
| FB201 | 1-410-397-21 | s | FERRITE BEAD INDUCTOR |
| FB202 | 1-410-397-21 | s | FERRITE BEAD INDUCTOR |
| FB203 | 1-410-397-21 | s | FERRITE BEAD INDUCTOR |
| FB204 | 1-410-397-21 | s | FERRITE BEAD INDUCTOR |
| FB205 | 1-410-397-21 | s | FERRITE BEAD INDUCTOR |
| FL1 | 1-760-578-11 | s | FILTER, CERAMIC |
| FL2 | 1-579-348-11 | s | FILTER,CERAMIC |
| FL3 | 1-414-760-21 | s | INDUCTOR, MICRO (CHIP TYPE) |
| FL4 | 1-414-760-21 | s | INDUCTOR, MICRO (CHIP TYPE) |
| IC1 | 8-759-710-07 | s | IC NJM2234M |
| IC2 | 8-759-304-10 | s | IC HA11465A |
| IC4 | 8-759-983-69 | s | IC LM358PS |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| IC5 | 8-759-009-07 | s | IC MC14053BF |
| IC6 | 8-759-196-69 | s | IC BA7655AF-E2 |
| IC200 | 8-759-473-67 | s | IC PQ3RF33 |
| IC201 | 8-759-701-79 | s | IC NJM7812FA |
| IC300 | 8-759-278-46 | s | IC PST600DMT (T1) |
| IC301 | 8-759-925-80 | s | IC SN74HC14ANS |
| IC302 | 8-759-270-25 | s | IC SN74HC251ANSR |
| IC303 | 8-759-270-25 | s | IC SN74HC251ANSR |
| IC304 | 8-759-660-62 | s | IC HD6473657F-UP895-VER1.0 |
| IC305 | 8-759-672-80 | s | IC M24C02-MN6T(A) |
| IC400 | 8-759-600-24 | s | IC M54543L |
| IC401 | 8-759-983-69 | s | IC LM358PS |
| IC430 | 8-759-058-54 | s | IC TC7S00FU-TE85R |
| IC431 | 8-759-257-96 | s | IC TC7S14FU (TE85R) |
| IC500 | 8-759-528-24 | s | IC MB40C568HPF-ER |
| IC501 | 8-759-644-67 | s | IC CXD9113AR |
| IC502 | 8-752-334-64 | s | IC CXD1171M |
| IC503 | 8-759-650-92 | s | IC MB81F64842D-102FN |
| IC504 | 8-759-359-12 | s | IC DS1000Z-100 |
| IC505 | 8-759-287-50 | s | IC CXD8932Q |
| IC506 | 8-759-524-21 | s | IC TC74VHC174FT(EL) |
| J300 | 1-507-967-11 | s | JACK |
| L2 | 1-410-369-11 | s | CHIP INDUCTOR 1.0UH (3225) |
| L3 | 1-410-369-11 | s | CHIP INDUCTOR 1.0UH (3225) |
| L5 | 1-410-391-11 | s | CHIP INDUCTOR 68UH (3225) |
| L6 | 1-410-391-11 | s | CHIP INDUCTOR 68UH (3225) |
| L7 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L101 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L302 | 1-408-775-21 | s | CHIP INDUCTOR 6.8UH (4532) |
| L303 | 1-408-775-21 | s | CHIP INDUCTOR 6.8UH (4532) |
| L304 | 1-408-777-00 | s | CHIP INDUCTOR 10UH (4532) |
| L305 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L306 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L307 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L308 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L309 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L310 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L311 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L400 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L403 | 1-408-765-21 | s | CHIP INDUCTOR 1UH (4532) |
| L500 | 1-408-769-41 | s | CHIP INDUCTOR 2.2UH |
| L501 | 1-408-769-41 | s | CHIP INDUCTOR 2.2UH |
| Q1 | 8-729-901-00 | s | TRANSISTOR DTC124EK |
| Q2 | 8-729-120-28 | s | TRANSISTOR 2SC1623-L5L6 |
| Q5 | 8-729-216-22 | s | TRANSISTOR 2SA1162-G |
| Q6 | 8-729-402-81 | s | TRANSISTOR XN4501 |
| Q7 | 8-729-402-84 | s | TRANSISTOR XN4601 |
| Q8 | 8-729-120-28 | s | TRANSISTOR 2SC1623-L5L6 |
| Q11 | 8-729-120-28 | s | TRANSISTOR 2SC1623-L5L6 |
| Q12 | 8-729-402-84 | s | TRANSISTOR XN4601 |
| Q13 | 8-729-035-96 | s | TRANSISTOR XN4402-(TX) |
| Q14 | 8-729-402-81 | s | TRANSISTOR XN4501 |
| Q16 | 8-729-402-84 | s | TRANSISTOR XN4601 |
| Q17 | 8-729-402-84 | s | TRANSISTOR XN4601 |
| Q21 | 8-729-402-81 | s | TRANSISTOR XN4501 |
| Q40 | 8-729-120-28 | s | TRANSISTOR 2SC1623-L5L6 |
| Q41 | 8-729-901-00 | s | TRANSISTOR DTC124EK |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| Q50 | 8-729-402-81 | s | TRANSISTOR XN4501 |
| Q51 | 8-729-216-22 | s | TRANSISTOR 2SA1162-G |
| Q52 | 8-729-216-22 | s | TRANSISTOR 2SA1162-G |
| Q54 | 8-729-216-22 | s | TRANSISTOR 2SA1162-G |
| Q173 | 8-729-035-96 | s | TRANSISTOR XN4402-(TX) |
| Q174 | 8-729-035-96 | s | TRANSISTOR XN4402-(TX) |
| Q200 | 8-729-140-75 | s | TRANSISTOR 2SD999-CLOCK |
| Q220 | 8-729-402-81 | s | TRANSISTOR XN4501 |
| Q221 | 8-729-120-28 | s | TRANSISTOR 2SC1623-L5L6 |
| Q300 | 8-729-901-00 | s | TRANSISTOR DTC124EK |
| Q301 | 8-729-901-00 | s | TRANSISTOR DTC124EK |
| Q400 | 8-729-140-75 | s | TRANSISTOR 2SD999-CLOCK |
| Q401 | 8-729-120-28 | s | TRANSISTOR 2SC1623-L5L6 |
| Q402 | 8-729-140-75 | s | TRANSISTOR 2SD999-CLOCK |
| Q403 | 8-729-017-80 | s | TRANSISTOR 2SD992-Z |
| Q404 | 8-729-017-80 | s | TRANSISTOR 2SD992-Z |
| Q405 | 8-729-017-80 | s | TRANSISTOR 2SD992-Z |
| Q406 | 8-729-017-80 | s | TRANSISTOR 2SD992-Z |
| Q407 | 8-729-017-80 | s | TRANSISTOR 2SD992-Z |
| R1 | 1-216-811-11 | s | RESISTOR, CHIP 150 1/16W 1608 |
| R2 | 1-216-811-11 | s | RESISTOR, CHIP 150 1/16W 1608 |
| R4 | 1-216-829-11 | s | RESISTOR, CHIP 4.7K 1/16W 1608 |
| R5 | 1-216-831-11 | s | RESISTOR,CHIP 6.8K 1/16W(1608) |
| R6 | 1-216-834-11 | s | RESISTOR,CHIP 12K 1/16W 1608 |
| R7 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R8 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R9 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R18 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R19 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R21 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R22 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R23 | 1-216-844-11 | s | RESISTOR,CHIP 82K 1/16W 1608 |
| R24 | 1-216-819-11 | s | RESISTOR,CHIP 680 1/16W 1608 |
| R25 | 1-216-829-11 | s | RESISTOR, CHIP 4.7K 1/16W 1608 |
| R26 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R30 | 1-216-812-11 | s | RESISTOR,CHIP 180 1/16W 1608 |
| R31 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R32 | 1-216-828-11 | s | RESISTOR, CHIP 3.9K 1/16W 1608 |
| R33 | 1-216-812-11 | s | RESISTOR,CHIP 180 1/16W 1608 |
| R34 | 1-216-817-11 | s | RESISTOR,CHIP 470 1/16W 1608 |
| R35 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R36 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R37 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R38 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R39 | 1-216-819-11 | s | RESISTOR,CHIP 680 1/16W 1608 |
| R40 | 1-216-815-11 | s | RESISTOR,CHIP 330 1/16W 1608 |
| R41 | 1-216-811-11 | s | RESISTOR, CHIP 150 1/16W 1608 |
| R42 | 1-216-811-11 | s | RESISTOR, CHIP 150 1/16W 1608 |
| R43 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R53 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R56 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R57 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R58 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R59 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R60 | 1-216-856-11 | s | RESISTOR, CHIP 820K 1/16W 1608 |
| R61 | 1-218-871-11 | s | RESISTOR,CHIP 10K 1/16W (1608) |
| R62 | 1-218-871-11 | s | RESISTOR,CHIP 10K 1/16W (1608) |
| R63 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R64 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| R65 | 1-216-829-11 | s | RESISTOR, CHIP 4.7K 1/16W 1608 |
| R66 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R67 | 1-216-837-11 | s | RESISTOR,CHIP 22K 1/16W 1608 |
| R68 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R69 | 1-216-826-11 | s | RESISTOR,CHIP 2.7K 1/16W 1608 |
| R70 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R71 | 1-218-879-11 | s | RESISTOR,CHIP 22K 1/16W (1608) |
| R72 | 1-216-830-11 | s | RESISTOR,CHIP 5.6K 1/16W 1608 |
| R74 | 1-216-845-11 | s | RESISTOR,CHIP 100K 1/16W(1608) |
| R75 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R76 | 1-216-831-11 | s | RESISTOR,CHIP 6.8K 1/16W(1608) |
| R97 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R98 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R101 | 1-216-834-11 | s | RESISTOR,CHIP 12K 1/16W 1608 |
| R103 | 1-216-824-11 | s | RESISTOR, CHIP 1.8K 1/16W 1608 |
| R104 | 1-216-843-11 | s | RESISTOR,CHIP 68K 1/16W (1608) |
| R123 | 1-218-845-11 | s | RESISTOR,CHIP 820 1/16W (1608) |
| R124 | 1-218-847-11 | s | RESISTOR, CHIP 1K 1/16W (1608) |
| R125 | 1-218-833-11 | s | RESISTOR,CHIP 270 1/16W (1608) |
| R127 | 1-216-864-11 | s | RESISTOR,CHIP 0 1/16W (1608) |
| R128 | 1-216-864-11 | s | RESISTOR,CHIP 0 1/16W (1608) |
| R130 | 1-216-824-11 | s | RESISTOR, CHIP 1.8K 1/16W 1608 |
| R131 | 1-216-817-11 | s | RESISTOR,CHIP 470 1/16W 1608 |
| R132 | 1-216-818-11 | s | RESISTOR, CHIP 560 1/16W 1608 |
| R133 | 1-218-861-11 | s | RESISTOR,CHIP 3.9K 1/16W(1608) |
| R150 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R155 | 1-216-832-11 | s | RESISTOR,CHIP 8.2K 1/16W 1608 |
| R156 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R157 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R158 | 1-216-815-11 | s | RESISTOR,CHIP 330 1/16W 1608 |
| R159 | 1-216-823-11 | s | RESISTOR, CHIP 1.5K 1/16W |
| R160 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R161 | 1-216-830-11 | s | RESISTOR,CHIP 5.6K 1/16W 1608 |
| R162 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R163 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R164 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R167 | 1-216-815-11 | s | RESISTOR,CHIP 330 1/16W 1608 |
| R168 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R173 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R174 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R175 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R176 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R177 | 1-216-295-91 | s | RESISTOR, CHIP 0 (1/10W) |
| R180 | 1-414-760-21 | s | INDUCTOR, MICRO (CHIP TYPE) |
| R181 | 1-216-864-11 | s | RESISTOR,CHIP 0 1/16W (1608) |
| R200 | 1-216-343-00 | s | RESISTOR,METAL FILM 0.33/1W |
| R220 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R221 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R222 | 1-216-856-11 | s | RESISTOR, CHIP 820K 1/16W 1608 |
| R223 | 1-218-871-11 | s | RESISTOR,CHIP 10K 1/16W (1608) |
| R224 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R225 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R226 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R227 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R228 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R229 | 1-218-871-11 | s | RESISTOR,CHIP 10K 1/16W (1608) |
| R230 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R231 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R232 | 1-216-819-11 | s | RESISTOR,CHIP 680 1/16W 1608 |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| R233 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R234 | 1-216-819-11 | s | RESISTOR,CHIP 680 1/16W 1608 |
| R235 | 1-216-822-11 | s | RESISTOR, CHIP 1.2K 1/16W 1608 |
| R236 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R237 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R238 | 1-216-826-11 | s | RESISTOR,CHIP 2.7K 1/16W 1608 |
| R239 | 1-216-803-11 | s | RESISTOR,CHIP 33 1/16W 1608 |
| R240 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R300 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R302 | 1-216-815-11 | s | RESISTOR,CHIP 330 1/16W 1608 |
| R303 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R304 | 1-216-815-11 | s | RESISTOR,CHIP 330 1/16W 1608 |
| R305 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R306 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R307 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R308 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R310 | 1-216-817-11 | s | RESISTOR,CHIP 470 1/16W 1608 |
| R311 | 1-216-824-11 | s | RESISTOR, CHIP 1.8K 1/16W 1608 |
| R312 | 1-216-857-11 | s | RESISTOR, CHIP 1.0M 1/16W 1608 |
| R313 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R314 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R315 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R316 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R317 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R318 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R319 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R320 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R321 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R322 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R323 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R324 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R325 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R326 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R329 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R330 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R332 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R334 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R335 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R336 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R337 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R338 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R339 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R340 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R341 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R342 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R343 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R354 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R355 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R356 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R357 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R362 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R363 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R364 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R365 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R366 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R367 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R368 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R369 | 1-414-813-11 | s | MICRO INDUCTOR(CHIP TYPE) 2012 |
| R370 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| R371 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R372 | 1-414-813-11 | s | MICRO INDUCTOR(CHIP TYPE) 2012 |
| R373 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R374 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R375 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R376 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R377 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R378 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R379 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R380 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R381 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R382 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R383 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R384 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R385 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R386 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R387 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R388 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R389 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R390 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R391 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R392 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R393 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R394 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R395 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R396 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R397 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R398 | 1-216-815-11 | s | RESISTOR,CHIP 330 1/16W 1608 |
| R400 | 1-216-818-11 | s | RESISTOR, CHIP 560 1/16W 1608 |
| R401 | 1-216-818-11 | s | RESISTOR, CHIP 560 1/16W 1608 |
| R402 | 1-216-818-11 | s | RESISTOR, CHIP 560 1/16W 1608 |
| R403 | 1-216-818-11 | s | RESISTOR, CHIP 560 1/16W 1608 |
| R404 | 1-216-825-11 | s | RESISTOR,CHIP 2.2K 1/16W 1608 |
| R405 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R406 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R407 | 1-220-238-11 | s | RESISTOR CHIP 10 1/4W (3225) |
| R408 | 1-220-238-11 | s | RESISTOR CHIP 10 1/4W (3225) |
| R409 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R410 | 1-216-833-11 | s | RESISTOR,CHIP 10K 1/16W 1608 |
| R411 | 1-216-824-11 | s | RESISTOR, CHIP 1.8K 1/16W 1608 |
| R412 | 1-216-821-11 | s | RESISTOR,CHIP 1.0K 1/16W(1608) |
| R413 | 1-216-817-11 | s | RESISTOR,CHIP 470 1/16W 1608 |
| R414 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R415 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R416 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R417 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R418 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R419 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R420 | 1-218-861-11 | s | RESISTOR,CHIP 3.9K 1/16W(1608) |
| R421 | 1-218-875-11 | s | RESISTOR,CHIP 15K 1/16W (1608) |
| R423 | 1-218-895-11 | s | RESISTOR,CHIP 100K 1/16W(1608) |
| R424 | 1-218-899-11 | s | RESISTOR,CHIP 150K 1/16W(1608) |
| R425 | 1-218-879-11 | s | RESISTOR,CHIP 22K 1/16W (1608) |
| R426 | 1-216-864-11 | s | RESISTOR,CHIP 0 1/16W (1608) |
| R427 | 1-216-864-11 | s | RESISTOR,CHIP 0 1/16W (1608) |
| R430 | 1-216-815-11 | s | RESISTOR,CHIP 330 1/16W 1608 |
| R431 | 1-216-837-11 | s | RESISTOR,CHIP 22K 1/16W 1608 |
| R432 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R501 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| R502 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R503 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R504 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R505 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R506 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R507 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R508 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R509 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R510 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R511 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R512 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R513 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R514 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R515 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R516 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R517 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R518 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R519 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R520 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R521 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R522 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R524 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R525 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R526 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R527 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R528 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R529 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R530 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R531 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R532 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R533 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R534 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R535 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R536 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R537 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R538 | 1-218-843-11 | s | RESISTOR,CHIP 680 1/16W (1608) |
| R539 | 1-211-983-11 | s | RESISTOR,CHIP 39 1/16W (1608) |
| R540 | 1-218-833-11 | s | RESISTOR,CHIP 270 1/16W (1608) |
| R541 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R542 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R543 | 1-216-827-11 | s | RESISTOR, CHIP 3.3K 1/16W 1608 |
| R544 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R545 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R546 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R547 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R548 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R549 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R550 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R552 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R554 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R555 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R556 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R557 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R558 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R559 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R560 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R561 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R563 | 1-216-857-11 | s | RESISTOR, CHIP 1.0M 1/16W 1608 |
| R564 | 1-216-857-11 | s | RESISTOR, CHIP 1.0M 1/16W 1608 |

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| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| R565 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R566 | 1-216-813-11 | s | RESISTOR, CHIP 220 1/16W 1608 |
| R567 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R568 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R569 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R570 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R571 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R572 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R573 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R574 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R575 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R576 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R577 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R578 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R579 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R580 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R581 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R582 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R583 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R584 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R585 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R586 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R587 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R588 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R589 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R590 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R591 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R592 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R593 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R594 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R595 | 1-216-809-11 | s | RESISTOR,CHIP 100 1/16W 1608 |
| R596 | 1-216-864-11 | s | RESISTOR,CHIP 0 1/16W (1608) |
| R597 | 1-216-864-11 | s | RESISTOR,CHIP 0 1/16W (1608) |
| RV2 | 1-241-178-21 | s | RESISTOR ADJ 4.7K (CERMET) |
| RV3 | 1-238-087-11 | s | RESISTOR ADJ 1K (CERMET) |
| RV4 | 1-238-090-11 | s | RESISTOR,ADJ 10K (CERMET) |
| RV5 | 1-238-090-11 | s | RESISTOR,ADJ 10K (CERMET) |
| RV6 | 1-241-092-11 | s | RESISTOR,ADJ 1K (CERMENT)(3MM) |
| RY1 | 1-515-614-11 | s | RELAY (12V) |
| S300 | 1-762-299-11 | s | SWITCH, DIP (PIANO TYPE) |
| X300 | 1-767-464-11 | s | VIBRATOR, CRYSTAL |
| X500 | 1-767-425-21 | s | VIBRATOR, CRYSTAL |

## SE-531 BOARD

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| 1pc | A-8323-916-A | o | MOUNTED CIRCUIT BOARD, SE-531 |
| CN31 | 1-573-806-21 | s | PIN,CONNECTOR (6P)(SMD)(1.5MM) |
| PH21 | 8-719-052-69 | s | PHOTO INTERRUPTER RPI-352 |
| PH22 | 8-719-052-69 | s | PHOTO INTERRUPTER RPI-352 |
| PH31 | 8-719-988-59 | s | PHOTO TRANSISTOR PT501A |
| PH32 | 8-749-010-50 | s | PHOTO INTERUPTER RPI-5100 |
| R21 | 1-216-073-00 | s | RESISTOR,CHIP 10K 1/10W(2012) |
| R22 | 1-216-029-00 | s | RESISTOR,CHIP 150 1/10W(2012) |
| R23 | 1-216-073-00 | s | RESISTOR,CHIP 10K 1/10W(2012) |
| R24 | 1-216-029-00 | s | RESISTOR,CHIP 150 1/10W(2012) |
| R31 | 1-216-029-00 | s | RESISTOR,CHIP 150 1/10W(2012) |
| R32 | 1-216-073-00 | s | RESISTOR,CHIP 10K 1/10W(2012) |

## SE-532 BOARD

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| 1pc | A-8323-917-A | o | MOUNTED CIRCUIT BOARD, SE-532 |
| 1pc | 3-689-205-02 | s | HOLDER (A), LED |
| 1pc | 3-187-312-02 | s | HOLDER (P), LED |
| C11 | 1-164-004-11 | s | CAPACITOR,CERAMIC 0.1MF/25V |
| C12 | 1-164-004-11 | s | CAPACITOR,CERAMIC 0.1MF/25V |
| CN11 | 1-580-056-21 | o | PIN,CONNECTOR 3P |
| D11 | 8-719-945-20 | s | LED GL-520 |
| PH12 | 8-729-019-26 | s | TRANSISTOR PT493F |
| R11 | 1-216-023-00 | s | RESISTOR,CHIP 82 1/10W(2012) |
| R12 | 1-216-047-91 | s | RESISTOR, CHIP 820 1/10W(2125) |

## SU-52 BOARD

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| 1pc | 1-676-696-11 | o | PRINTED WIRING BOARD, SU-52 |
| CN41 | 1-770-160-21 | s | PIN, CONNECTOR (SMT) 2P |

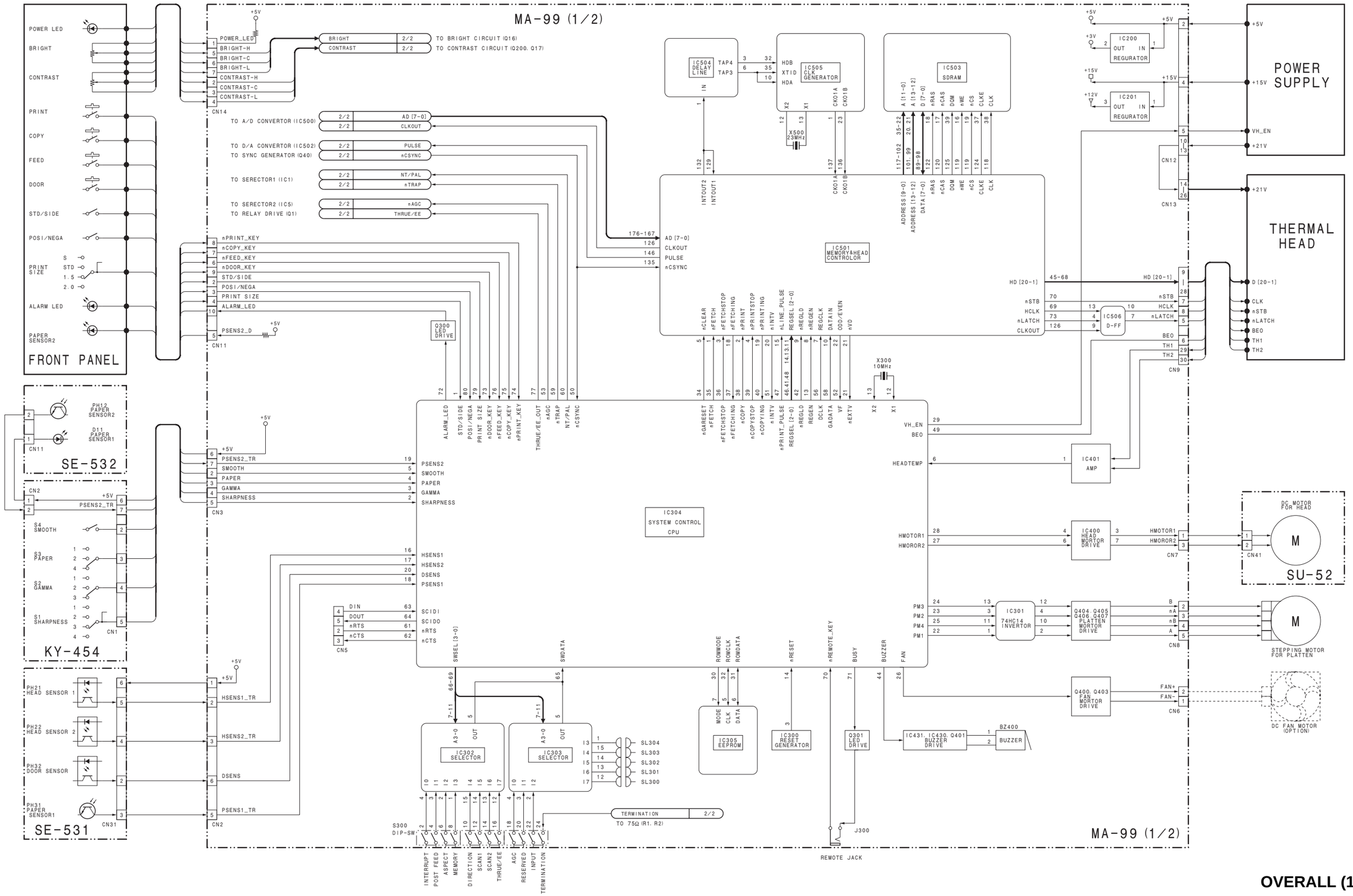
## FRAME

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| 1pc | 1-251-855-11 | s | HEAD, THERMAL (LVE6413SS) |
| 1pc | 1-418-820-11 | s | PANEL UNIT, FRONT |
| 1pc | ⚠ 1-468-456-12 | s | REGULATOR, SWITCHING |
| 1pc | 1-541-309-11 | s | MOTOR,(RF-370C)(DC)(2.59W) |
| 1pc | 1-698-928-22 | s | MOTOR, STEPPING |
| 1pc | 1-763-007-21 | o | FAN, DC (OPTION) |
| 1pc | 1-792-200-11 | o | WIRE, FLAT TYPE (8 CORE) |
| 1pc | 1-792-201-11 | o | WIRE, FLAT TYPE (26 CORE) |
| 1pc | 1-792-202-11 | o | WIRE, FLAT TYPE (30 CORE) |
| HN001 | 1-960-220-11 | o | HARNESS, SUB (6P) |
| (TO CN2/MA-99 BOARD) | | | |
| | 1-569-200-11 | o | HOUSING, CONNECTOR 7P |
| 6pcs | 1-569-193-21 | o | TERMINAL, SOLDERLESS |
| (TO CN31/SE-531 BOARD) | | | |
| | 1-565-978-11 | o | HOUSING, CONNECTOR 6P |
| 6pcs | 1-565-977-11 | s | TERMINAL, SOLDERLESS |
| HN002 | 1-960-221-11 | o | HARNESS, SUB (3P) |
| (TO CN2/KY-454 BOARD) | | | |
| | 1-569-618-11 | o | HOUSING, CONNECTOR 3P |
| 3pcs | 1-565-977-11 | s | TERMINAL, SOLDERLESS |
| (TO CN11/SE-532 BOARD) | | | |
| | 1-569-618-11 | o | HOUSING, CONNECTOR 3P |
| 3pcs | 1-565-977-11 | s | TERMINAL, SOLDERLESS |
| HN003 | 1-960-222-11 | o | HARNESS, SUB (2P) |
| (TO CN7/MA-99 BOARD) | | | |
| | 1-569-196-11 | o | HOUSING, CONNECTOR 3P |
| 2pcs | 1-569-193-21 | o | TERMINAL, SOLDERLESS |
| (TO CN41/SU-52 BOARD) | | | |
| | 1-562-644-11 | s | SOCKET, CONNECTOR 2P |
| 2pcs | 1-562-643-11 | o | TERMINAL, SOLDERLESS |

## PACKING MATERIALS & SUPPLIED ACCESSORIES

| Ref. No. or Q'ty | Part No. | SP | Description |
|---|---|---|---|
| 1pc | ⚠ 1-534-827-14 | s | CORD, POWER (3P)(UL/CSA) [UP-895(UC)] |
| 1pc | 1-551-475-31 | s | 3C2V 1.5M CABLE [UP-895(J,UC)] [UP-895CE(CE)] [UP-895MD(J,UC)] |
| 1pc | ⚠ 1-551-631-22 | s | POWER-SUPPLY CORD (IEC) [UP-895CE(CE)] |
| 1pc | ⚠ 1-575-703-12 | s | CORD, POWER [UP-895MD(J)] |
| 1pc | ⚠ 1-783-954-11 | s | CORD, POWER [UP-895MD(UC)] |
| 1pc | ⚠ 1-791-041-11 | s | CORD SET, POWER (3P) [UP-895(J)] |
| 1pc | ⚠ 1-793-461-11 | o | PLUG, CONVERSION (3P-2P) [UP-895(J),UP-895MD(J)] |
| 1pc | 3-623-865-01 | s | SHEET,HEAD CLEANING (ACLYLIC) |
| 1pc | 3-624-867-01 | o | LABEL,MEDIA |
| 1pc | 3-868-286-01 | s | MANUAL, INSTRUCTION |

# Section 9
# Block Diagram




**OVERALL (1/2)**

MA-99 (2/2)

VIDEO IN

R1, R2
75Ω

TERMINATION 1/2
TO DIP-SW (S300)

Q50
AMP

FL1, Q51
TRAP FILTER

FL2, Q52
TRAP FILTER

IC1
SELECTOR1

IC2
VIDEO AMP 1
VIN
SYNCOUT
CNTROUT
CNTR

Q220
BUFFER

IC6
VIDEO AMP 2
IN
OUT
VCC
CLT

Q6
AMP

L2, L3
LPF

Q7
AMP

IC500
A/D CONV
D [7-0]
VIN
VRT
VTB
CLK

AD [7-0] 1/2
TO MEMORY&HEAD CONTROLOR (IC501)

CLKOUT 1/2
TO MEMORY&HEAD CONTROLOR (IC501)

Q21
REFERENCE
GENERATOR

Q13
PEDESTAL
CLAMP

Q14
INTEGRATION
CIRCUIT

Q11, Q12
CLAMP PULSE
GENERATOR

IC4
VIDEO
AMP

RV2
GAIN
ADJUST

RV3
REF
ADJUST

AGC CIRCUIT

RV4
AGC OFF
ADJUST

IC5 (1/3)
SELECTOR2

Q200
CONTRAST
GENERATOR

RV5
CONTRAST
ADJUST

Q17
AMP

RV6
BRIGHT
ADJUST

Q16
AMP

Q40
SYNC
GENERATOR

TO SYSTEM CONTROLOR (IC304)
1/2 NT/PAL
1/2 nTRAP
1/2 nCSYNC
1/2 nAGC

1/2 CONTRAST
1/2 BRIGHT
TO FRONT PANEL (CN14)

CONTRAST-H
CONTRAST-L
CONTRAST-C
BRIGHT-H
BRIGHT-L
BRIGHT-C

RY1
GND

VIDEO-OUT
CN10

IC5 (1/3)
SELECTOR3

SELECTOR4

Q174
HSYNC GENERATOR

Q173
AMP

IC502
D/A CONV
VOUT
D [7-0]
CLK
REF
BLK

R538, R539, R540
REFERENCE
GENERATOR

Q1
RELAY
DRIVE

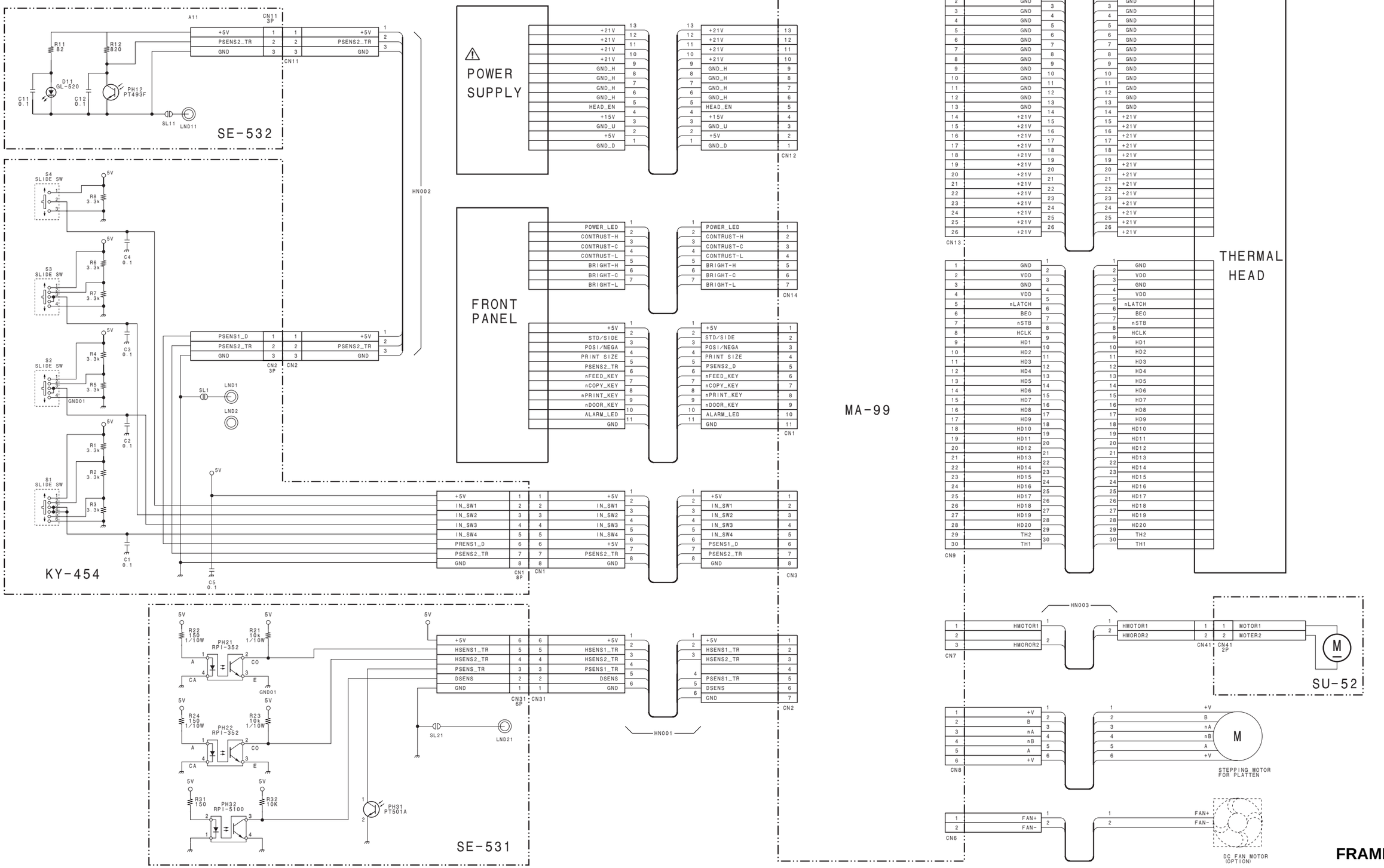
THRUE/EE 1/2
TO SYSCON (IC304)

PULSE 1/2
TO MEMORY&HEAD CONTROLOR (IC501)

MA-99 (2/2)

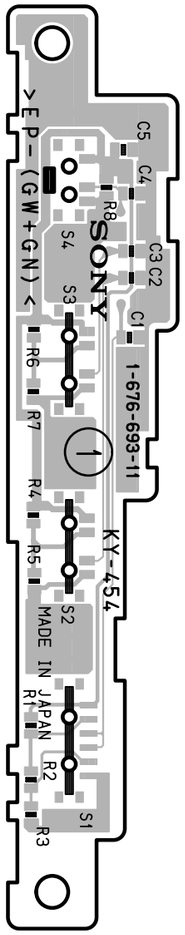
**OVERALL (2/2)**

# Section 10
# Schematic Diagrams and Board Layouts

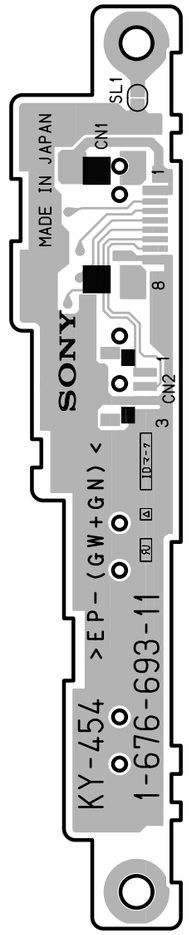

A11
CN11 3P
+5V
PSENS2_TR
GND
CN11
R11 82
R12 820
D11 GL-520
PH12 PT493F
C11 0.1
C12 0.1
SL11
LND11
SE-532
HN002
S4 SLIDE SW
S3 SLIDE SW
S2 SLIDE SW
S1 SLIDE SW
R8 3.3k
R6 3.3k
R7 3.3k
R4 3.3k
R5 3.3k
R1 3.3k
R2 3.3k
R3 3.3k
C4 0.1
C3 0.1
C2 0.1
C1 0.1
C5 0.1
GND01
PSENS1_D
PSENS2_TR
GND
CN2 3P
CN2
SL1
LND1
LND2
+5V
IN_SW1
IN_SW2
IN_SW3
IN_SW4
PRENS1_D
PSENS2_TR
GND
CN1 8P
CN1
KY-454
R22 150 1/10W
R21 10k 1/10W
PH21 RPI-352
R24 150 1/10W
R23 10k 1/10W
PH22 RPI-352
R31 150
R32 10K
PH32 RPI-5100
PH31 PT501A
HSENS1_TR
HSENS2_TR
PSENS_TR
DSENS
GND
CN31 6P
CN31
SL21
LND21
SE-531
POWER SUPPLY
+21V
GND_H
GND_H
GND_H
GND_H
HEAD_EN
+15V
GND_U
+5V
GND_D
CN12
FRONT PANEL
POWER_LED
CONTRUST-H
CONTRUST-C
CONTRUST-L
BRIGHT-H
BRIGHT-C
BRIGHT-L
CN14
STD/SIDE
POSI/NEGA
PRINT SIZE
PSENS2_TR
nFEED_KEY
nCOPY_KEY
nPRINT_KEY
nDOOR_KEY
ALARM_LED
GND
CN1
PSENS2_D
HSENS1_TR
PSENS1_TR
DSENS
CN2
CN3
HN001
MA-99
GND
VDD
nLATCH
BEO
nSTB
HCLK
HD1
HD2
HD3
HD4
HD5
HD6
HD7
HD8
HD9
HD10
HD11
HD12
HD13
HD14
HD15
HD16
HD17
HD18
HD19
HD20
TH2
TH1
CN9
CN13
THERMAL HEAD
HN003
HMOTOR1
HMOROR2
CN7
MOTOR1
MOTER2
CN41 2P
SU-52
+V
B
nA
nB
A
CN8
STEPPING MOTOR FOR PLATTEN
FAN+
FAN-
CN6
DC FAN MOTOR (OPTION)

**FRAME**

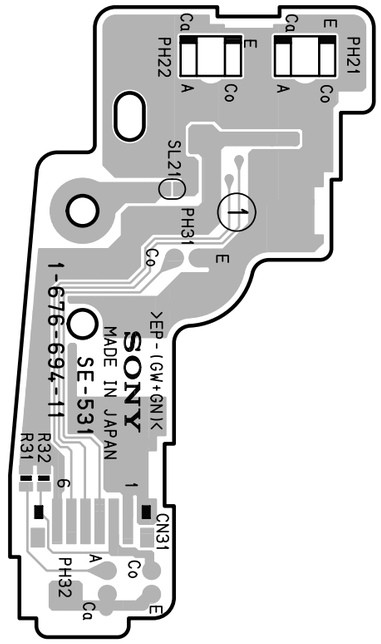
KY-454, SE-531, SE-532, SU-52



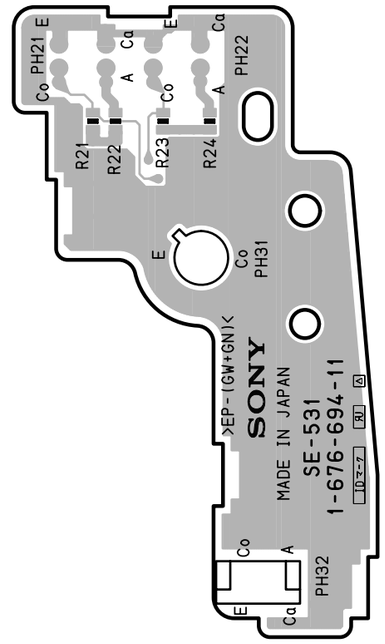

**KY-454** -A SIDE-
SUFFIX: -11



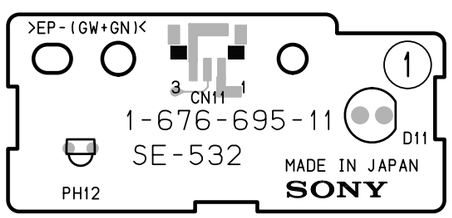

**KY-454** -B SIDE-
SUFFIX: -11



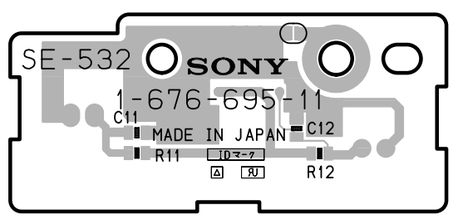

**SE-531** -A SIDE-
SUFFIX: -11



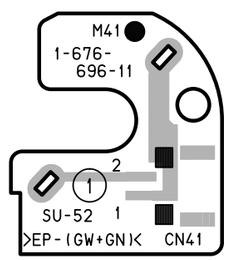

**SE-531** -B SIDE-
SUFFIX: -11



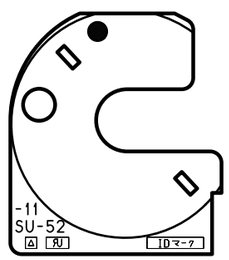

**SE-532** -A SIDE-
SUFFIX: -11




**SE-532** -B SIDE-
SUFFIX: -11

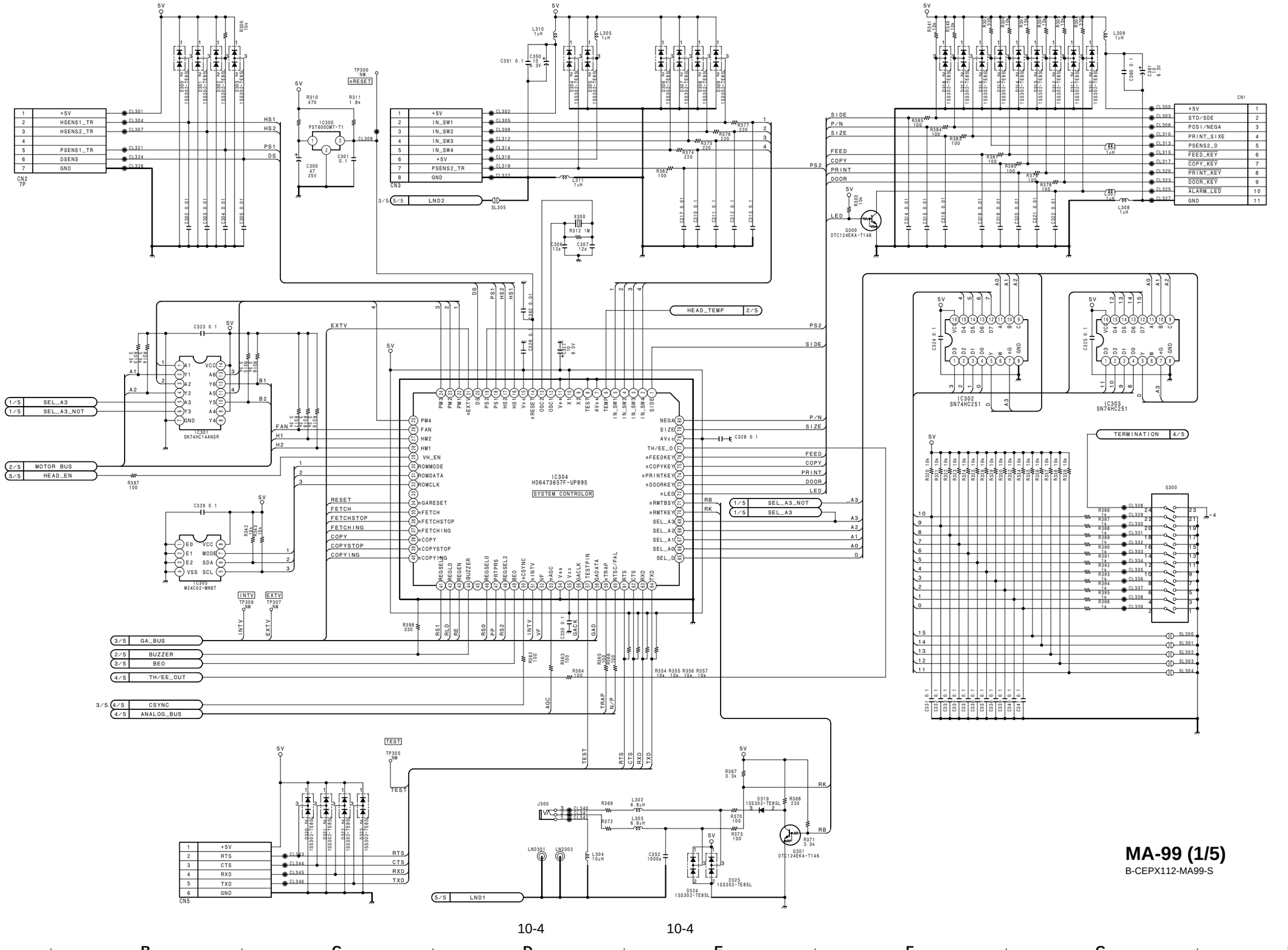



**SU-52** -A SIDE-
SUFFIX: -11




**SU-52** -B SIDE-
SUFFIX: -11

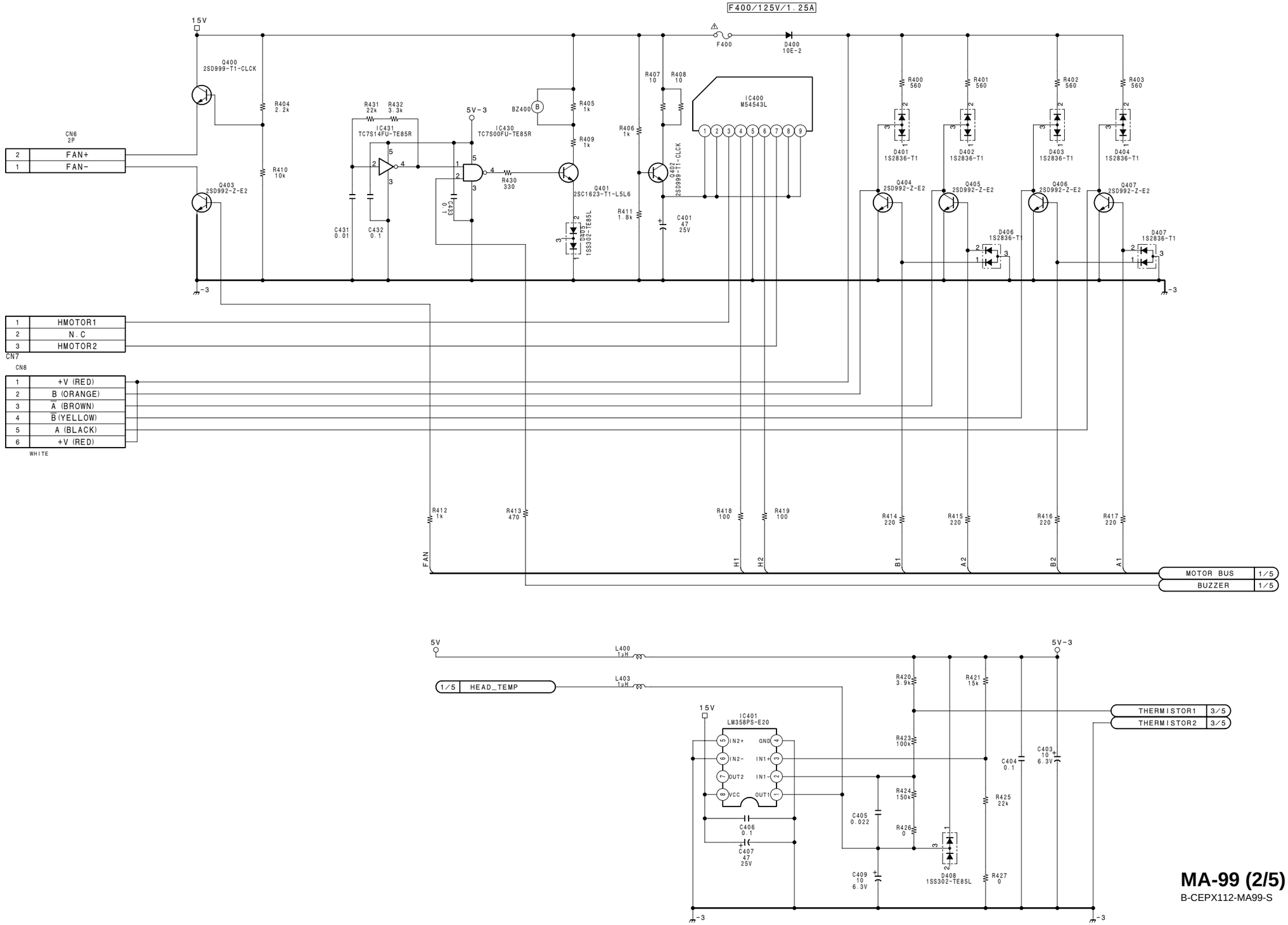
MA-99 (1/5)



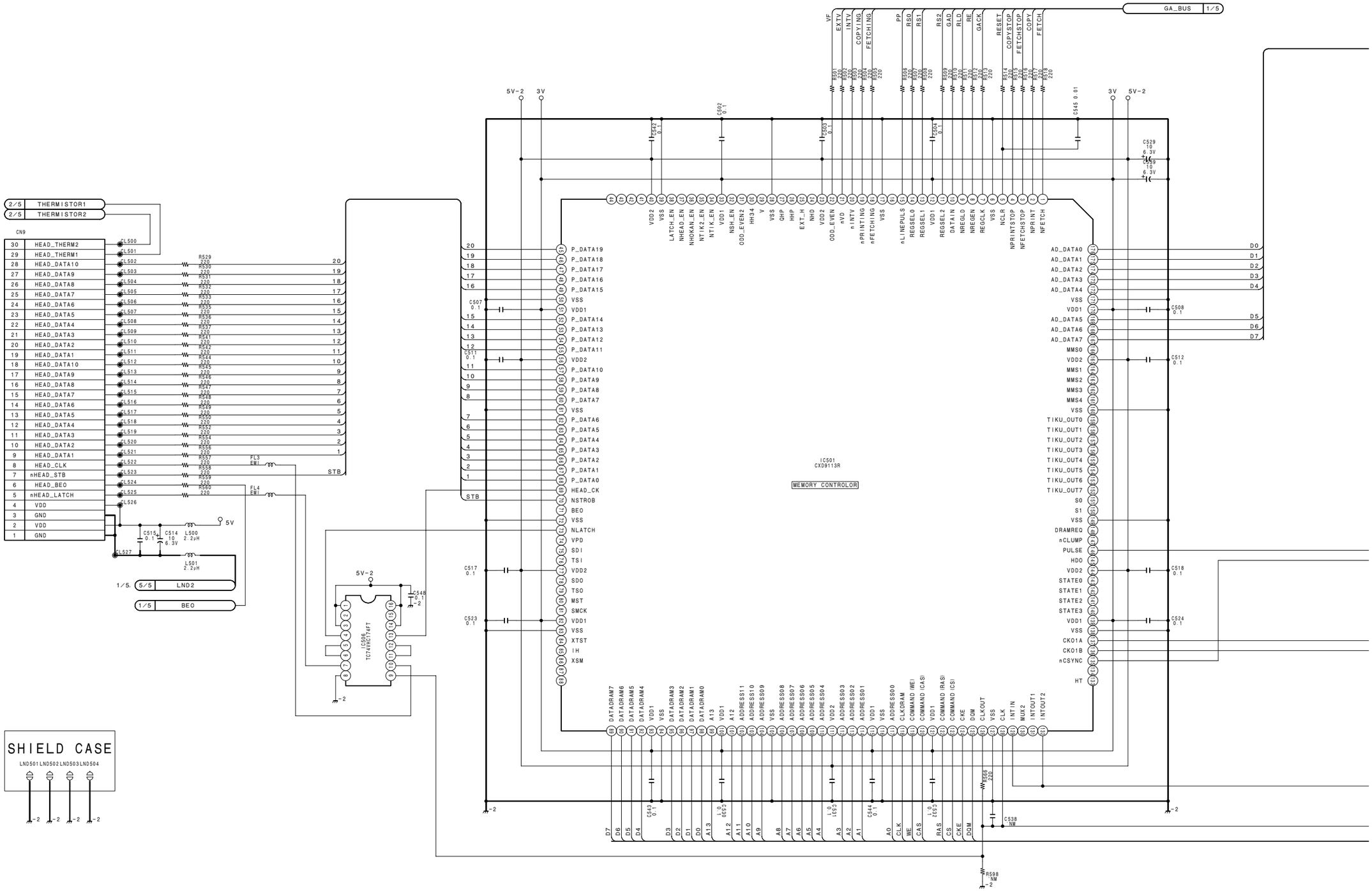


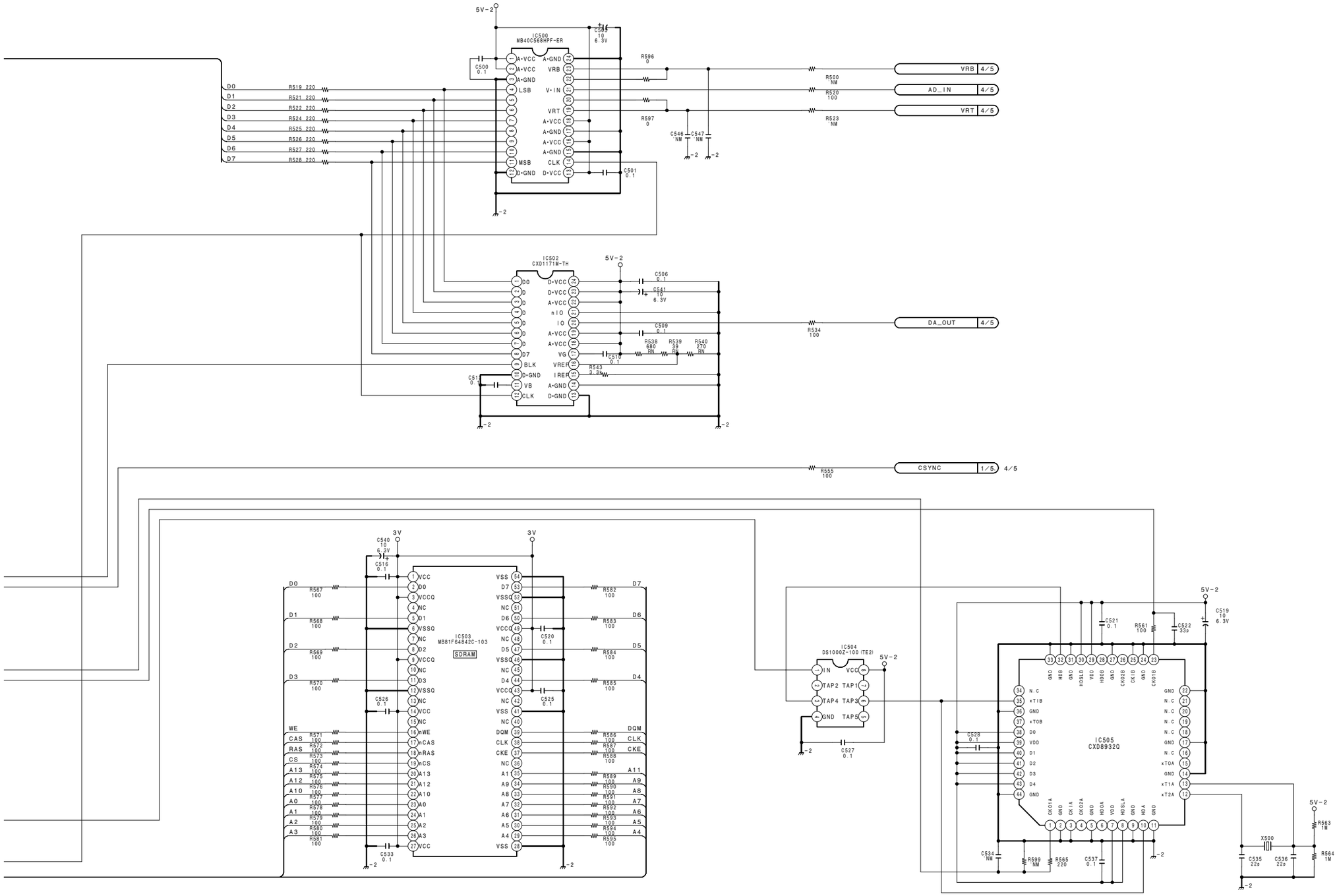
10-4

**MA-99 (1/5)**
B-CEPX112-MA99-S




**MA-99 (2/5)**
B-CEPX112-MA99-S

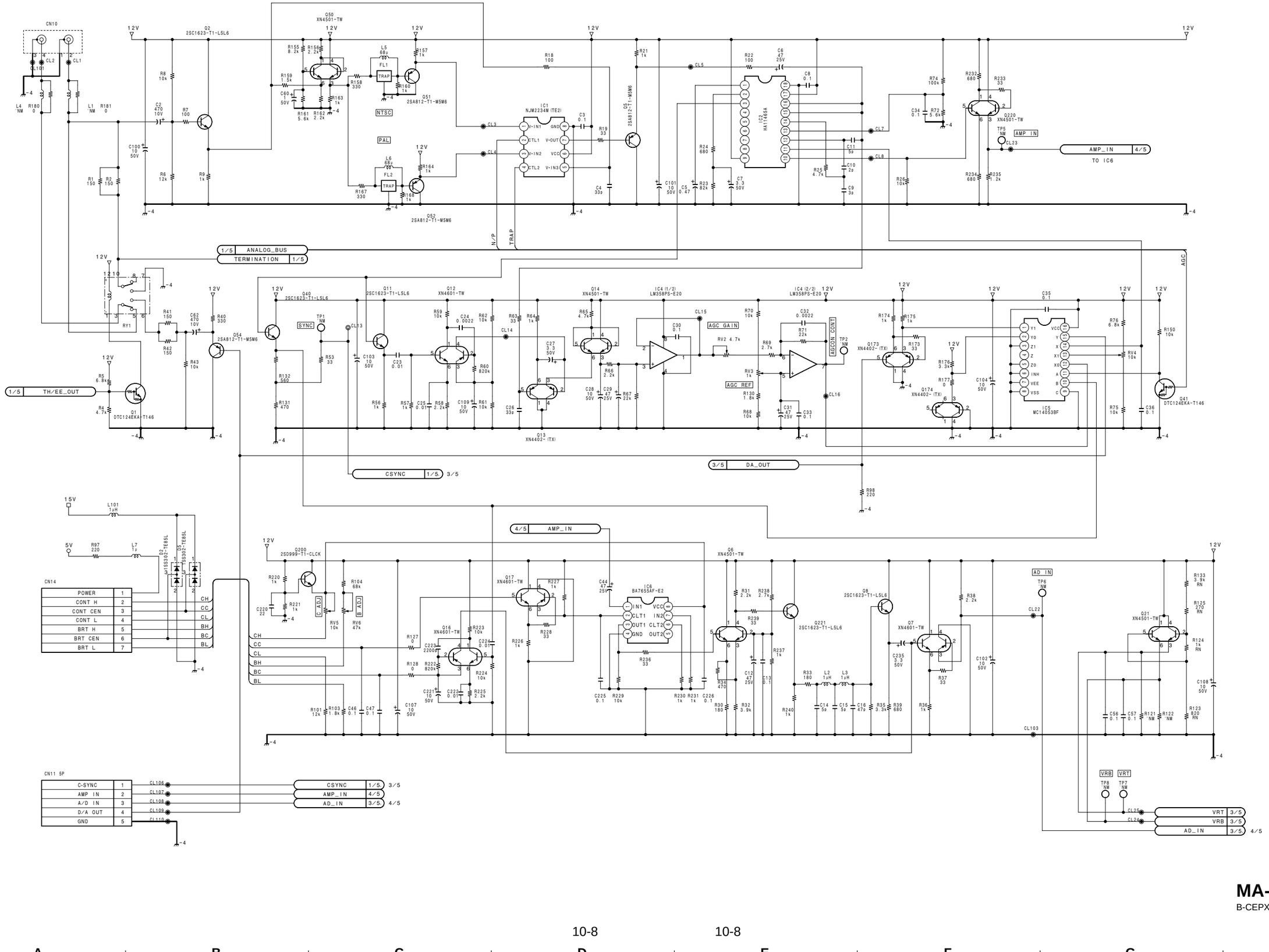

GA_BUS 1/5
2/5 THERMISTOR1
2/5 THERMISTOR2
CN9
HEAD_THERM2
HEAD_THERM1
HEAD_DATA10
HEAD_DATA9
HEAD_DATA8
HEAD_DATA7
HEAD_DATA6
HEAD_DATA5
HEAD_DATA4
HEAD_DATA3
HEAD_DATA2
HEAD_DATA1
HEAD_DATA10
HEAD_DATA9
HEAD_DATA8
HEAD_DATA7
HEAD_DATA6
HEAD_DATA5
HEAD_DATA4
HEAD_DATA3
HEAD_DATA2
HEAD_DATA1
HEAD_CLK
nHEAD_STB
HEAD_BEO
nHEAD_LATCH
VDD
GND
VDD
GND
5V
1/5. 5/5 LND2
1/5 BEO
FL3 EMI
FL4 EMI
SHIELD CASE
LND501 LND502 LND503 LND504
IC501
CXD9113R
MEMORY CONTROLOR
IC506
TC74VHC174FT
5V-2
3V
VF
EXTV
INTV
COPYING
FETCHING
PP
RSO
RS1
RS2
GAD
RLD
RE
GACK
RESET
COPYSTOP
FETCHSTOP
COPY
FETCH
P_DATA19
P_DATA18
P_DATA17
P_DATA16
P_DATA15
P_DATA14
P_DATA13
P_DATA12
P_DATA11
P_DATA10
P_DATA9
P_DATA8
P_DATA7
P_DATA6
P_DATA5
P_DATA4
P_DATA3
P_DATA2
P_DATA1
P_DATA0
HEAD_CK
NSTROB
BEO
NLATCH
VPD
SDI
TSI
SDO
TSO
MST
SMCK
XTST
IH
XSM
AD_DATA0
AD_DATA1
AD_DATA2
AD_DATA3
AD_DATA4
AD_DATA5
AD_DATA6
AD_DATA7
MMS0
MMS1
MMS2
MMS3
MMS4
TIKU_OUT0
TIKU_OUT1
TIKU_OUT2
TIKU_OUT3
TIKU_OUT4
TIKU_OUT5
TIKU_OUT6
TIKU_OUT7
S0
S1
DRAMREQ
nCLUMP
PULSE
HDO
STATE0
STATE1
STATE2
STATE3
CKO1A
CKO1B
nCSYNC
HT
D0
D1
D2
D3
D4
D5
D6
D7
DATADRAM7
DATADRAM6
DATADRAM5
DATADRAM4
DATADRAM3
DATADRAM2
DATADRAM1
DATADRAM0
ADDRESS11
ADDRESS10
ADDRESS09
ADDRESS08
ADDRESS07
ADDRESS06
ADDRESS05
ADDRESS04
ADDRESS03
ADDRESS02
ADDRESS01
ADDRESS00
CLKDRAM
COMMAND (WE)
COMMAND (CAS)
COMMAND (RAS)
COMMAND (CS)
CKE
DQM
CLKOUT
CLK
INTIN
MUX2
INTOUT1
INTOUT2
R598 NM
C538 NM




# MA-99 (3/5)

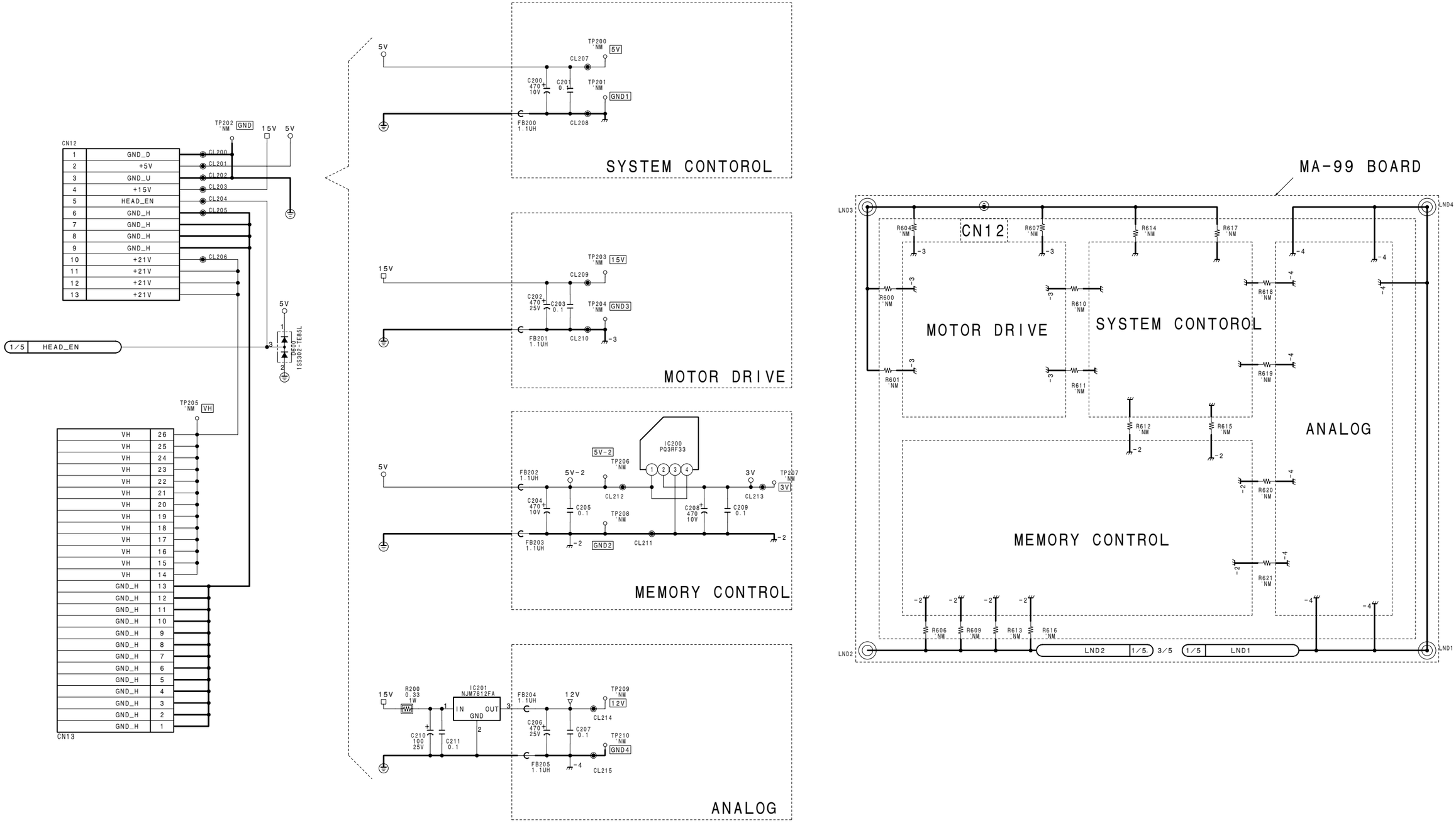
B-CEPX112-MA99-S

MA-99 (4/5)

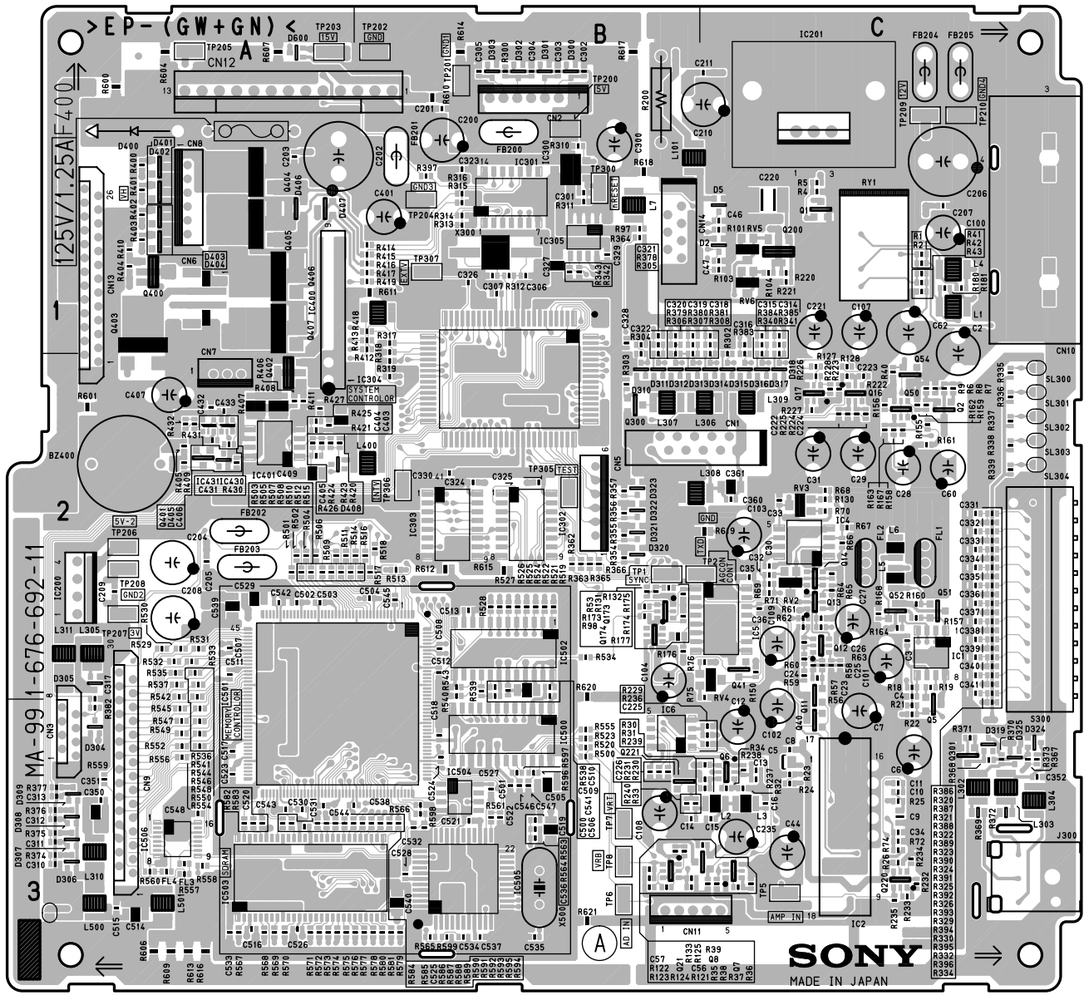



**MA-99 (4/5)**

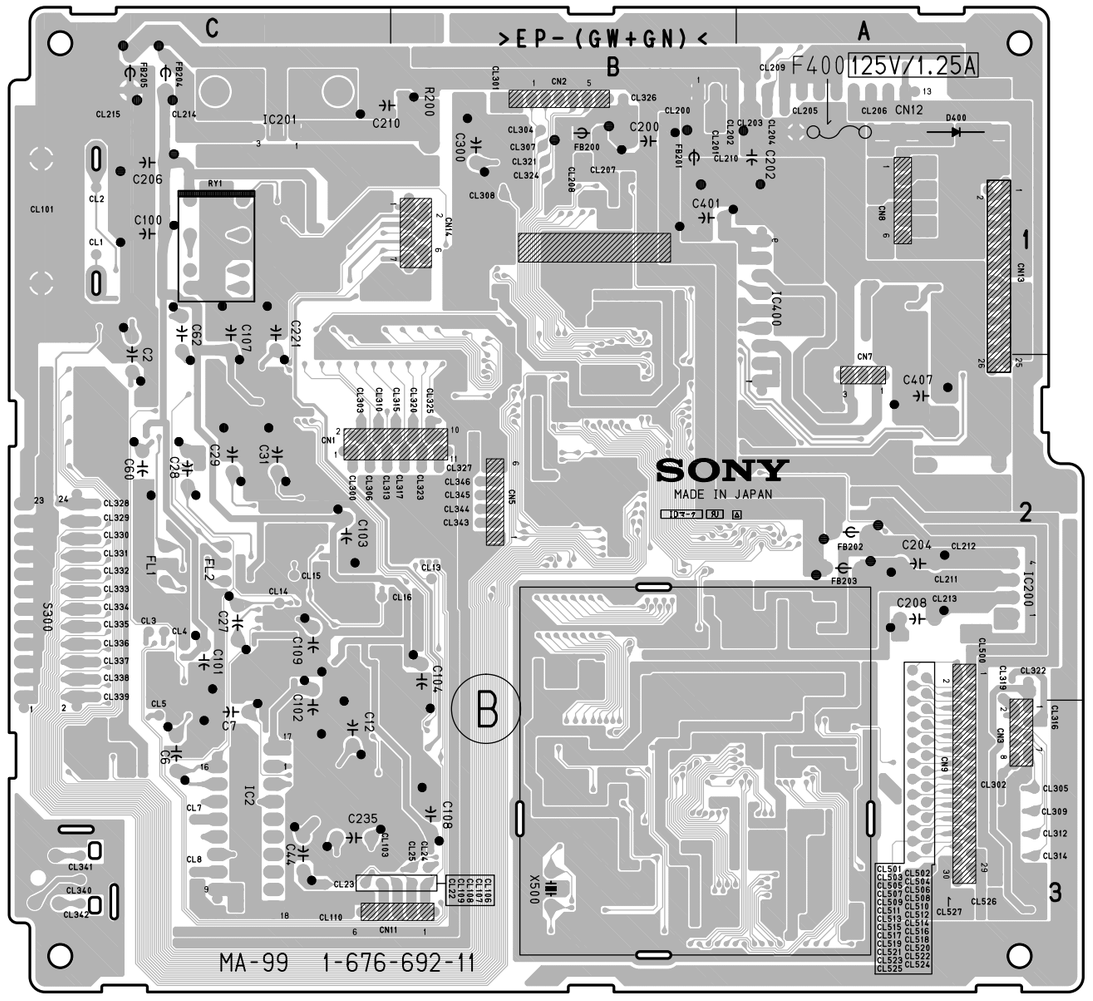
B-CEPX112-MA99-S




**MA-99 (5/5)**
B-CEPX112-MA99-S




**MA-99** -A SIDE-
SUFFIX: -11




**MA-99** -B SIDE-
SUFFIX: -11

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MA-99 (1-676-692-11)
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*:B SIDE

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BZ400 | A2 | C332 | C2 | CL109 | *C3 | CN6 | A1 | L5 | C2 | R56 | C2 | R320 | C2 | R505 | A2 | R607 | A1 |
| | | C333 | C2 | CL110 | *C3 | CN7 | A2 | L6 | C2 | R57 | C2 | R321 | C2 | R506 | A2 | R609 | A3 |
| C2 | C2 | C334 | C2 | CL200 | *B1 | CN8 | A1 | L7 | B1 | R58 | C2 | R322 | C2 | R507 | A2 | R610 | B1 |
| C3 | C2 | C335 | C2 | CL201 | *B1 | CN9 | A3 | L101 | B1 | R59 | C2 | R323 | C2 | R508 | A2 | R611 | B1 |
| C4 | C2 | C336 | C2 | CL202 | *B1 | CN10 | C1 | L302 | C3 | R60 | C2 | R324 | C2 | R509 | A2 | R612 | B2 |
| C5 | C3 | C337 | C2 | CL203 | *A1 | CN11 | B3 | L303 | C3 | R61 | C2 | R325 | C2 | R510 | A2 | R613 | A3 |
| C6 | C3 | C338 | C2 | CL204 | *A1 | CN12 | B1 | L304 | C3 | R62 | C2 | R326 | C2 | R511 | A2 | R614 | B1 |
| C7 | C3 | C339 | C2 | CL205 | *A1 | CN13 | A2 | L305 | A2 | R63 | C2 | R329 | C2 | R512 | A2 | R615 | B2 |
| C8 | C3 | C340 | C2 | CL206 | *A1 | CN14 | B1 | L306 | C2 | R64 | C2 | R330 | C2 | R513 | B2 | R616 | A3 |
| C9 | C3 | C341 | C2 | CL207 | *B1 | | | L307 | B2 | R65 | C2 | R332 | C2 | R514 | B2 | R617 | B1 |
| C10 | C3 | C350 | A3 | CL208 | *B1 | D2 | C1 | L308 | B2 | R66 | C2 | R334 | C3 | R515 | B2 | R618 | B1 |
| C11 | C3 | C351 | A3 | CL209 | *A1 | D5 | C1 | L309 | C2 | R67 | C2 | R335 | C2 | R516 | B2 | R619 | C2 |
| C12 | C3 | C352 | C3 | CL210 | *B1 | D300 | B1 | L310 | A3 | R68 | C2 | R336 | C2 | R517 | B2 | R620 | B2 |
| C13 | C3 | C360 | C2 | CL211 | *A2 | D301 | B1 | L311 | A2 | R69 | C2 | R337 | C2 | R518 | B2 | R621 | B3 |
| C14 | B3 | C361 | C2 | CL212 | *A2 | D302 | B1 | L400 | B2 | R70 | C2 | R338 | C2 | R519 | B2 | | |
| C15 | C3 | C362 | B1 | CL213 | *A2 | D303 | B1 | L403 | B1 | R71 | C2 | R339 | C2 | R520 | B3 | RV2 | C2 |
| C16 | C3 | C401 | B1 | CL214 | *C1 | D304 | A3 | L500 | A3 | R72 | C3 | R340 | C2 | R521 | B2 | RV3 | C2 |
| C23 | C2 | C403 | A2 | CL215 | *C1 | D305 | A2 | L501 | A3 | R74 | C3 | R341 | C2 | R522 | B2 | RV4 | C2 |
| C24 | C2 | C404 | A2 | CL300 | *C2 | D306 | A3 | | | R75 | C2 | R342 | B1 | R523 | B3 | RV5 | C1 |
| C25 | C2 | C405 | A2 | CL301 | *B1 | D307 | A3 | LND1 | C3 | R76 | C2 | R343 | B1 | R524 | B2 | RV6 | C1 |
| C26 | C2 | C406 | A2 | CL302 | *A3 | D308 | A3 | LND2 | A3 | R97 | B1 | R354 | B2 | R525 | B2 | | |
| C27 | C2 | C407 | A2 | CL303 | *C2 | D309 | A3 | LND3 | A1 | R98 | B2 | R355 | B2 | R526 | B2 | RY1 | C1 |
| C28 | C2 | C409 | A2 | CL304 | *B1 | D310 | B2 | LND4 | C1 | R101 | C1 | R356 | B2 | R527 | B2 | | |
| C29 | C2 | C431 | A2 | CL305 | *A3 | D311 | B2 | LND301 | *C3 | R103 | C1 | R357 | B2 | R528 | B2 | S300 | C2 |
| C30 | C2 | C432 | A2 | CL306 | *C2 | D312 | B2 | LND302 | *C3 | R104 | C1 | R362 | B2 | R529 | A2 | | |
| C31 | C2 | C433 | A2 | CL307 | *B1 | D313 | B2 | LND501 | *B2 | R121 | B3 | R363 | B2 | R530 | A2 | SL300 | C2 |
| C32 | C2 | C500 | B2 | CL308 | *B1 | D314 | C2 | LND502 | *B3 | R122 | B3 | R364 | B1 | R531 | A2 | SL301 | C2 |
| C33 | C2 | C501 | B3 | CL309 | *A3 | D315 | C2 | LND503 | *A3 | R123 | B3 | R365 | B2 | R532 | A2 | SL302 | C2 |
| C34 | C3 | C502 | A2 | CL310 | *C2 | D316 | C2 | LND504 | *B3 | R124 | B3 | R366 | B2 | R533 | A2 | SL303 | C2 |
| C35 | C2 | C503 | A2 | CL312 | *A3 | D317 | C2 | | | R125 | B3 | R367 | C3 | R534 | B2 | SL304 | C2 |
| C36 | C2 | C504 | B2 | CL313 | *C2 | D318 | C2 | Q1 | C1 | R127 | C2 | R368 | C3 | R535 | A2 | SL305 | A3 |
| C44 | C3 | C505 | B3 | CL314 | *A3 | D319 | C3 | Q2 | C2 | R128 | C2 | R369 | C3 | R536 | A2 | | |
| C46 | C1 | C506 | B2 | CL315 | *B2 | D320 | B2 | Q5 | C3 | R130 | C2 | R370 | C3 | R537 | A2 | TP1 | B2 |
| C47 | C1 | C507 | A2 | CL316 | *A3 | D321 | B2 | Q6 | C3 | R131 | B2 | R371 | C3 | R538 | B2 | TP2 | C2 |
| C56 | B3 | C508 | B2 | CL317 | *B2 | D322 | B2 | Q7 | C3 | R132 | B2 | R372 | C3 | R539 | B2 | TP5 | C3 |
| C57 | B3 | C509 | B2 | CL319 | *A2 | D323 | B2 | Q8 | C3 | R133 | B3 | R373 | C3 | R540 | B2 | TP6 | B3 |
| C60 | C2 | C510 | B2 | CL320 | *B2 | D324 | C3 | Q11 | C2 | R150 | C2 | R374 | A3 | R541 | A2 | TP7 | B3 |
| C62 | C1 | C511 | A2 | CL321 | *B1 | D325 | C3 | Q12 | C2 | R155 | C2 | R375 | A3 | R542 | A2 | TP8 | B3 |
| C100 | C1 | C512 | B2 | CL322 | *A2 | D400 | A1 | Q13 | C2 | R156 | C2 | R376 | A3 | R543 | B2 | TP200 | B1 |
| C101 | C2 | C513 | B2 | CL323 | *B2 | D401 | A1 | Q14 | C2 | R157 | C2 | R377 | A3 | R544 | A2 | TP201 | B1 |
| C102 | C2 | C514 | A3 | CL324 | *B1 | D402 | A1 | Q16 | C2 | R158 | C2 | R378 | B1 | R545 | A3 | TP202 | B1 |
| C103 | C2 | C515 | A3 | CL325 | *B2 | D403 | A1 | Q17 | C2 | R159 | C2 | R379 | B1 | R546 | A3 | TP203 | A1 |
| C104 | B2 | C516 | A3 | CL326 | *B1 | D404 | A1 | Q21 | B3 | R160 | C2 | R380 | B1 | R547 | A3 | TP204 | B1 |
| C107 | C1 | C517 | A3 | CL327 | *B2 | D405 | A2 | Q40 | C3 | R161 | C2 | R381 | C1 | R548 | A3 | TP205 | A1 |
| C108 | B3 | C518 | B3 | CL328 | *C2 | D406 | A1 | Q41 | C2 | R162 | C2 | R382 | A3 | R549 | A3 | TP206 | A2 |
| C109 | C2 | C519 | B3 | CL329 | *C2 | D407 | A1 | Q50 | C2 | R163 | C2 | R383 | C2 | R550 | A3 | TP207 | A2 |
| C200 | B1 | C520 | A3 | CL330 | *C2 | D408 | A2 | Q51 | C2 | R164 | C2 | R384 | C1 | R552 | A3 | TP208 | A2 |
| C201 | B1 | C521 | B3 | CL331 | *C2 | D600 | A1 | Q52 | C2 | R167 | C2 | R385 | C1 | R554 | A3 | TP209 | C1 |
| C202 | A1 | C522 | B3 | CL332 | *C2 | | | Q54 | C2 | R168 | C2 | R386 | C2 | R555 | B3 | TP210 | C1 |
| C203 | A1 | C523 | A3 | CL333 | *C2 | F400 | A1 | Q173 | B2 | R173 | B2 | R387 | C2 | R556 | A3 | TP300 | B1 |
| C204 | A2 | C524 | B3 | CL334 | *C2 | | | Q174 | B2 | R174 | B2 | R388 | C2 | R557 | A3 | TP305 | B2 |
| C205 | A2 | C525 | A3 | CL335 | *C2 | FB200 | B1 | Q200 | C1 | R175 | B2 | R389 | C2 | R558 | A3 | TP306 | B2 |
| C206 | C1 | C526 | A3 | CL336 | *C2 | FB201 | B1 | Q220 | C3 | R176 | B2 | R390 | C2 | R559 | A3 | TP307 | B1 |
| C207 | C1 | C527 | B3 | CL337 | *C2 | FB202 | A2 | Q221 | B3 | R177 | B2 | R391 | C2 | R560 | A3 | | |
| C208 | A2 | C528 | B3 | CL338 | *C2 | FB203 | A2 | Q300 | B2 | R180 | C1 | R392 | C2 | R561 | B3 | X300 | B1 |
| C209 | A2 | C529 | A2 | CL339 | *C2 | FB204 | C1 | Q301 | C3 | R181 | C1 | R393 | C2 | R563 | B3 | X500 | B3 |
| C210 | B1 | C530 | A3 | CL340 | *C3 | FB205 | C1 | Q400 | A1 | R200 | B1 | R394 | C2 | R564 | B3 | | |
| C211 | C1 | C531 | A3 | CL341 | *C3 | | | Q401 | A2 | R220 | C1 | R395 | C2 | R565 | B3 | | |
| C220 | C1 | C532 | B3 | CL342 | *C3 | FL1 | C2 | Q402 | A2 | R221 | C1 | R396 | C2 | R566 | B3 | | |
| C221 | C1 | C533 | A3 | CL343 | *B2 | FL2 | C2 | Q403 | A1 | R222 | C2 | R397 | B1 | R567 | A3 | | |
| C222 | C2 | C534 | B3 | CL344 | *B2 | FL3 | A3 | Q404 | A1 | R223 | C2 | R398 | B2 | R568 | A3 | | |
| C223 | C2 | C535 | B3 | CL345 | *B2 | FL4 | A3 | Q405 | A1 | R224 | C2 | R400 | A1 | R569 | A3 | | |
| C224 | C2 | C536 | B3 | CL346 | *B2 | | | Q406 | A1 | R225 | C2 | R401 | A1 | R570 | A3 | | |
| C225 | C3 | C537 | B3 | CL500 | *A2 | IC1 | C2 | Q407 | A1 | R226 | C2 | R402 | A1 | R571 | A3 | | |
| C226 | B3 | C538 | B3 | CL501 | *A2 | IC2 | C3 | | | R227 | C2 | R403 | A1 | R572 | A3 | | |
| C235 | C3 | C539 | A2 | CL502 | *A2 | IC4 | C2 | R1 | C1 | R228 | C2 | R404 | A1 | R573 | A3 | | |
| C300 | B1 | C540 | B3 | CL503 | *A2 | IC5 | C2 | R2 | C1 | R229 | C3 | R405 | A2 | R574 | A3 | | |
| C301 | B1 | C541 | B2 | CL504 | *A2 | IC6 | B3 | R4 | C1 | R230 | B3 | R406 | A2 | R575 | A3 | | |
| C302 | B1 | C542 | A2 | CL505 | *A3 | IC200 | A2 | R5 | C1 | R231 | B3 | R407 | A2 | R576 | B3 | | |
| C303 | B1 | C543 | A3 | CL506 | *A3 | IC201 | C1 | R6 | C2 | R232 | C3 | R408 | A2 | R577 | B3 | | |
| C304 | B1 | C544 | A3 | CL507 | *A3 | IC300 | B1 | R7 | C2 | R233 | C3 | R409 | A2 | R578 | B3 | | |
| C305 | B1 | C545 | B2 | CL508 | *A3 | IC301 | B1 | R8 | C2 | R234 | C3 | R410 | A1 | R579 | B3 | | |
| C306 | B1 | C546 | B3 | CL509 | *A3 | IC302 | B2 | R9 | C2 | R235 | C3 | R411 | A2 | R580 | B3 | | |
| C307 | B1 | C547 | B3 | CL510 | *A3 | IC303 | B2 | R18 | C2 | R236 | C3 | R412 | B1 | R581 | B3 | | |
| C310 | A3 | C548 | A3 | CL511 | *A3 | IC304 | B2 | R19 | C2 | R237 | C3 | R413 | B1 | R582 | A3 | | |
| C311 | A3 | | | CL512 | *A3 | IC305 | B1 | R21 | C3 | R238 | C3 | R414 | B1 | R583 | A3 | | |
| C312 | A3 | CL1 | *C1 | CL513 | *A3 | IC400 | A2 | R22 | C3 | R239 | C3 | R415 | B1 | R584 | A3 | | |
| C313 | A3 | CL2 | *C1 | CL514 | *A3 | IC401 | A2 | R23 | C3 | R240 | B3 | R416 | B1 | R585 | A3 | | |
| C314 | C1 | CL3 | *C2 | CL515 | *A3 | IC430 | A2 | R24 | C3 | R300 | B1 | R417 | B1 | R586 | A3 | | |
| C315 | C1 | CL4 | *C2 | CL516 | *A3 | IC431 | A2 | R25 | C3 | R302 | C2 | R418 | B1 | R587 | A3 | | |
| C316 | C1 | CL5 | *C3 | CL517 | *A3 | IC500 | B3 | R26 | C3 | R303 | B2 | R419 | B1 | R588 | A3 | | |
| C317 | A2 | CL7 | *C3 | CL518 | *A3 | IC501 | A3 | R30 | C3 | R304 | B2 | R420 | A2 | R589 | A3 | | |
| C318 | C1 | CL8 | *C3 | CL519 | *A3 | IC502 | B2 | R31 | C3 | R305 | B2 | R421 | A2 | R590 | A3 | | |
| C319 | B1 | CL13 | *B2 | CL520 | *A3 | IC503 | A3 | R32 | C3 | R306 | B2 | R423 | A2 | R591 | B3 | | |
| C320 | B1 | CL14 | *C2 | CL521 | *A3 | IC504 | B3 | R33 | B3 | R307 | B2 | R424 | A2 | R592 | B3 | | |
| C321 | B1 | CL15 | *C2 | CL522 | *A3 | IC505 | B3 | R34 | C3 | R308 | C2 | R425 | A2 | R593 | B3 | | |
| C322 | B1 | CL16 | *C2 | CL523 | *A3 | IC506 | A3 | R35 | C3 | R310 | B1 | R426 | A2 | R594 | B3 | | |
| C323 | B1 | CL22 | *C3 | CL524 | *A3 | | | R36 | C3 | R311 | B1 | R427 | A2 | R595 | B3 | | |
| C324 | B2 | CL23 | *C3 | CL525 | *A3 | J300 | C3 | R37 | C3 | R312 | B1 | R430 | A2 | R596 | B3 | | |
| C325 | B2 | CL24 | *B3 | CL526 | *A3 | | | R38 | C3 | R313 | B1 | R431 | A2 | R597 | B3 | | |
| C326 | B1 | CL25 | *B3 | CL527 | *A3 | KA1 | A1 | R39 | C3 | R314 | B1 | R432 | A2 | R598 | B3 | | |
| C327 | B1 | CL101 | *C1 | | | | | R40 | C2 | R315 | B1 | R500 | B3 | R599 | B3 | | |
| C328 | B1 | CL103 | *C3 | CN1 | C2 | L1 | C1 | R41 | C1 | R316 | B1 | R501 | A2 | R600 | A1 | | |
| C329 | B1 | CL106 | *B3 | CN2 | B1 | L2 | C3 | R42 | C1 | R317 | B1 | R502 | A2 | R601 | A2 | | |
| C330 | B2 | CL107 | *B3 | CN3 | A3 | L3 | C3 | R43 | C1 | R318 | B1 | R503 | A2 | R604 | A1 | | |
| C331 | C2 | CL108 | *B3 | CN5 | B2 | L4 | C1 | R53 | B2 | R319 | B2 | R504 | A2 | R606 | A3 | | |

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

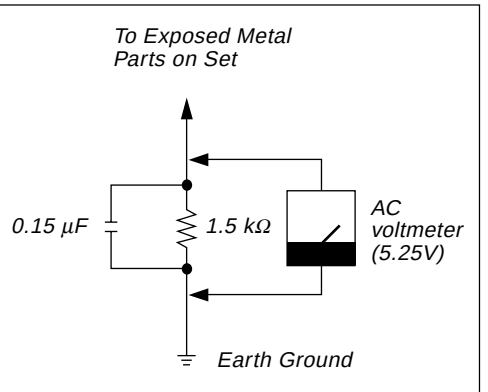


*Fig A. Using an AC voltmeter to check AC leakage.*

UP-895 (UC)
UP-895CE (CE)
UP-895MD (UC, SY) E
9-955-192-01

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